RADIOACTIVE AIR EMISSIONS LICENSE

For

The Department of Energy Richland Office
Hanford Site

Issued by

The State of Washington Department of Health
Office of Radiation Protection
Radioactive Air Emissions

License Number: RAEL-FF-01

Under the Nuclear Energy and Radiation, RCW 70.98 the Washington Clean Air Act, RCW 70.94 and the Radiation Protection - Air Emissions, Chapters 246-247 WAC, and in reliance on statements and representations made by the Licensee designated below before the effective date of this license, the Licensee is authorized to vent radionuclides from the emission unit identified in this license. The State of Washington Department of Health generates this license subject to all applicable rules. This license does not relieve the Licensee of compliance with other State or Federal agencies jurisdiction pertaining to hazardous air pollutants.

Licensee: The Department of Energy
Hanford Site
Richland Washington

Effective Date: October 20, 2017

Expiration Date: October 20, 2022

Approved By:

P. John Martell
Manager, Radioactive Air Emissions Section

Interpretation of the Regulations and Definitions
Use the following guidance when interpreting the combination of 40 CFR 61 Subparts A and H with WAC 173-480 and 246-247. The following definitions apply:

- Federal Clean Air Act and 40 CFR 61 Subparts A and H
  - Apply only those definitions given for these laws or regulations.
- Washington State Clean Air Act, WAC 173-480 and 246-247
  - Apply only those definitions given for these laws and regulations
- When a conflict of definition may arise, the more stringent definition as determined by the administrator applies.

Clarification of these general conditions will occur during the WAC 246-247 regulation rewrite. When determining applicability of a regulation the facility should contact the department for guidance prior to use. The department reserves the right to make final determination on applicability of regulations.

The emission unit specific information

The emission unit specific information (i.e., stack height and diameter, average temperature and velocity) are parameters used by the department to identify significant changes in operation of an emission unit. The emission unit specific information contained in this license is to assure consistent emission unit operation, the actual emission unit parameters must be maintained by the emission unit owner/operator and reported as required by both WAC 246-247 and 40CFR61 Subpart H.

Referenced documents in the emission unit specific conditions and limitations

If the document cited in the emission unit specific conditions and limitations reflects:

- Data that justifies the project or a specific requirement (i.e., design data, calculation data, etc.) it will stand as the referenced document.
- Description (i.e., monitoring process etc.), but does not change a requirement (i.e., frequency of monitoring etc) the latest approved revision of that document will stand as the referenced document.

When determining applicable referenced document the facility should contact the department for guidance prior to use. The department reserves the right to make final determination on which document will stand as the referenced document.

Definitions Used in This License.

40 CFR 61 Subpart A Definitions (61.02)

The terms used in this part are defined in the Act or in this section as follows:

Act means the Clean Air Act (42 U.S.C. 7401 *et seq.*).

Administrator means the Administrator of the Environmental Protection Agency or his authorized representative.

Alternative method means any method of sampling and analyzing for an air pollutant which is not a reference method but which has been demonstrated to the Administrator's satisfaction to produce results adequate for the Administrator's determination of compliance.

Approved permit program means a State permit program approved by the Administrator as meeting the requirements of part 70 of this chapter (40 CFR) or a Federal permit program established in this chapter pursuant to title V of the Act (42 U.S.C. 7661).

Capital expenditure means an expenditure for a physical or operational change to a stationary source which exceeds the product of the applicable “annual asset guideline repair allowance percentage” specified in the latest edition of Internal Revenue Service (IRS) Publication 534 and the stationary source's basis, as defined by section 1012 of the Internal Revenue Code. However, the total expenditure for a physical or operational change to a stationary source must not be reduced by any “excluded additions” as defined for stationary sources constructed after December 31, 1981, in IRS Publication 534, as would be done for tax purposes. In addition, “annual asset guideline repair allowance” may be used even though it is excluded for tax purposes in IRS Publication 534.

Commenced means, with respect to the definition of “new source” in section 111(a)(2) of the Act, that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification.

Compliance schedule means the date or dates by which a source or category of sources is required to comply with the standards of this part and with any steps toward such compliance which are set forth in a waiver of compliance under §61.11.

Construction means fabrication, erection, or installation of an affected facility.

Effective date is the date of promulgation in the Federal Register of an applicable standard or other regulation under this part.

Existing source means any stationary source which is not a new source.

Issuance of a part 70 permit will occur, if the State is the permitting authority, in accordance with the requirements of part 70 of this chapter (40 CFR) and the applicable, approved State permit program. When the EPA is the permitting authority, issuance of a title V permit occurs immediately after the EPA takes final action on the final permit.

Monitoring system means any system, required under the monitoring sections in applicable subparts, used to sample and condition (if applicable), to analyze, and to provide a record of emissions or process parameters.

New source means any stationary source, the construction or modification of which is commenced after the publication in the Federal Register of proposed national emission standards for hazardous air pollutants which will be applicable to such source.

Owner or operator means any person who owns, leases, operates, controls, or supervises a stationary source.

Part 70 permit means any permit issued, renewed, or revised pursuant to part 70 of this chapter (40 CFR).

Permit program means a comprehensive State operating permit system established pursuant to title V of the Act (42 U.S.C. 7661) and regulations codified in part 70 of this chapter (40 CFR) and applicable State regulations, or a comprehensive Federal operating permit system established pursuant to title V of the Act and regulations codified in this chapter.

Permitting authority means:

(1) The State air pollution control agency, local agency, other State agency, or other agency authorized by the Administrator to carry out a permit program under part 70 of this chapter (40 CFR); or

(2) The Administrator, in the case of EPA-implemented permit programs under title V of the Act (42 U.S.C. 7661).

Reference method means any method of sampling and analyzing for an air pollutant, as described in appendix B, 40 CFR 61.

Run means the net period of time during which an emission sample is collected. Unless otherwise specified, a run may be either intermittent or continuous within the limits of good engineering practice.

Standard means a national emission standard including a design, equipment, work practice or operational standard for a hazardous air pollutant proposed or promulgated under this part.

Startup means the setting in operation of a stationary source for any purpose.

State means all non-Federal authorities, including local agencies, interstate associations, and State-wide programs, that have delegated authority to implement:

(1) The provisions of this part; and/or

(2) The permit program established under part 70 of this chapter (40 CFR). The term State shall have its conventional meaning where clear from the context.

Stationary source means any building, structure, facility, or installation which emits or may emit any air pollutant (radionuclides in this case) which has been designated as hazardous by the Administrator.

Title V permit means any permit issued, renewed, or revised pursuant to Federal or State regulations established to implement title V of the Act (42 U.S.C. 7661). A title V permit issued by a State permitting authority is called a part 70 permit in this part.

40 CFR 61 Subpart H Definitions *(61.91)*

As used in this subpart, all terms not defined here have the meaning given them in the Clean Air Act or 40 CFR part 61, subpart A. The following terms shall have the following specific meanings:

(a) *Effective dose equivalent* means the sum of the products of absorbed dose and appropriate factors to account for differences in biological effectiveness due to the quality of radiation and its distribution in the body of reference man. The unit of the effective dose equivalent is the rem. For purposes of this subpart, doses caused by radon-222 and its respective decay products formed after the radon is released from the facility are not included. The method for calculating effective dose equivalent and the definition of reference man are outlined in the International Commission on Radiological Protection's Publication No. 26.

(b) *Facility* means all buildings, structures and operations on one contiguous site.

(c) *Radionuclide* means a type of atom which spontaneously undergoes radioactive decay.

(d) *Residence* means any home, house, apartment building, or other place of dwelling which is occupied during any portion of the relevant year.

WAC 246-247 Definitions. (WAC 246-247-030)

Terms used in this chapter have the definitions set forth below with reference to radioactive air emissions.

(1) "Abatement technology" means any mechanism, process or method that has the potential to reduce public exposure to radioactive air emissions. Abatement control features include automatic mechanisms and administrative controls used in the operation and control of abatement technology from entry of radionuclides into the ventilated vapor space to release to the environment.

(2) "Administrative control" means any policy or procedure that limits the emission of radionuclides.

(3) "ALARA" means as low as reasonably achievable making every reasonable effort to maintain exposures to radiation as far below the dose standards in this chapter as is practical, consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to the state of technology, the economics of improvements in relation to benefits to the public health and safety, and other socioeconomic considerations, and in relation to the utilization of nuclear energy, ionizing radiation, and radioactive materials in the public interest. See WAC 246-220-007.

(4) "As low as reasonably achievable control technology" (ALARACT) means the use of radionuclide emission control technology that achieves emission levels that are consistent with the philosophy of ALARA. ALARACT compliance is demonstrated by evaluating the existing control system and proposed nonsignificant modifications in relation to applicable technology standards and other control technologies operated successfully in similar applications. In no event shall application of ALARACT result in emissions of radionuclides that could cause exceedance of the applicable standards of WAC 246-247-040. See the definition of ALARA in this section. Note that ALARACT is equivalent to, but replaces, RACT in the May 7, 1986, version of chapter 173-480 WAC.

(5) "Annual possession quantity" means the sum of the quantity of a radionuclide on hand at the beginning of the calendar year and the quantity of that radionuclide received or produced during the calendar year.

(6) "Best available radionuclide control technology" (BARCT) means technology that will result in a radionuclide emission limitation based on the maximum degree of reduction for radionuclides from any proposed newly constructed or significantly modified emission units that the licensing authority determines is achievable on a case-by-case basis. A BARCT compliance demonstration must consider energy, environmental, and economic impacts, and other costs through examination of production processes, and available methods, systems, and techniques for the control of radionuclide emissions. A BARCT compliance demonstration is the conclusion of an evaluative process that results in the selection of the most effective control technology

from all known feasible alternatives. In no event shall application of BARCT result in emissions of radionuclides that could exceed the applicable standards of WAC 246-247-040. Control technology that meets BARCT requirements also meets ALARACT requirements. See WAC 173-480-030 and 246-247-120.

(7) "Committed effective dose equivalent" (CEDE) means the sum of the products of absorbed dose from internally deposited radionuclides and appropriate factors to account for differences in biological effectiveness due to the quality of radiation and its distribution in the body of reference man over a fifty-year period.

(8) "Construction" means fabrication, erection, or installation of a new building, structure, plant, process, or operation within a facility that has the potential to emit airborne radionuclides. Construction includes activities of a permanent nature aimed at completion of the emission unit, such as pouring concrete, putting in a foundation, or installing utilities directly related to the emission unit. It does not include preliminary activities such as tests to determine site suitability, equipment procurement and storage, site clearing and grading, and the construction of ancillary buildings.

(9) "Decommissioning" means actions taken to reduce or eliminate the potential public health and safety impacts of a building, structure, or plant that has permanently ceased operations, including, but not limited to, actions such as decontamination, demolition, and disposition.

(10) "Emission unit" means any single location that emits or has the potential to emit airborne radioactive material. This may be a point source, nonpoint source, or source of fugitive emissions.

(11) "Facility" means all buildings, structures, plants, processes, and operations on one contiguous site under control of the same owner or operator.

(12) "Fugitive emissions" are radioactive air emissions which do not and could not reasonably pass through a stack, vent, or other functionally equivalent structure, and which are not feasible to directly measure and quantify.

(13) "Indication device" means any method or apparatus used to monitor, or to enable monitoring, the operation of abatement controls or the potential or actual radioactive air emissions.

(14) "License" means a radioactive air emissions license issued by the department with requirements and limitations listed therein. Compliance with the license requirements are determined and enforced by the department. The license will be incorporated as an applicable requirement in the air operating permit issued by the department of ecology or a local air pollution control authority when the department of ecology or a local air pollution control authority issues an air operating permit.

(15) "Maximally exposed individual" (MEI) means any member of the public (real or hypothetical) who abides or resides in an unrestricted area, and may receive the highest TEDE from the emission unit(s) under consideration, taking into account all exposure pathways affected by the radioactive air emissions.

(16) "Modification" means any physical change in, or change in the method of operation of, an emission unit that could increase the amount of radioactive materials emitted or may result in the emission of any radionuclide not previously emitted. This definition includes the cleanup of land contaminated with radioactive material, the decommissioning of buildings, structures, or plants where radioactive contamination exists, and changes that will cause an increase in the emission unit's operating design capacity. This definition excludes routine maintenance, routine repair, replacement-in-kind, any increases in the production rate or hours of operation, provided the emission unit does not exceed the release quantities specified in the license application or the operating design capacity approved by the department, addition of abatement technology as long as it is not less environmentally beneficial than existing, approved controls, and changes that result in an increase in the quantity of emissions of an existing radionuclide that will be offset by an equal or greater decrease in the quantity of emissions of another radionuclide that is deemed at least as hazardous with regard to its TEDE to the MEI.

(17) "Monitoring" means the measurement of radioactive material released to the ambient air by means of an in-line radiation detector, and/or by the withdrawal of representative samples from the effluent stream. Ambient air measurements may be acceptable for nonpoint sources and fugitive emissions.

(18) "Nonpoint source" is a location at which radioactive air emissions originate from an area, such as contaminated ground above a near-surface waste disposal unit, whose extent may or may not be well-defined.

(19) "Notice of construction" (NOC) is an application submitted to the department by an applicant that contains information required by WAC 246-247-060 for proposed construction or modification of a registered emission unit(s), or for modification of an existing, unregistered emission unit(s).

(20) "Point source" is a discrete, well-defined location from which radioactive air emissions originate, such as a stack, vent, or other functionally equivalent structure.

(21) "Potential-to-emit" means the rate of release of radionuclides from an emission unit based on the actual or potential discharge of the effluent stream that would result if all abatement control equipment did not exist, but operations are otherwise normal. Determine the potential-to-emit by one of the following methods:

(a) Multiply the annual possession quantity of each radionuclide by the release fraction for that radionuclide, depending on its physical state. Use the following release fractions:

(i) 1 for gases;

(ii) 10-3 for liquids or particulate solids; and

(iii) 10-6 for solids.

Determine the physical state for each radionuclide by considering its chemical form and the highest temperature to which it is subjected. Use a release fraction of one if the radionuclide is subjected to temperatures at or above its boiling point; use a release

fraction of 10-3 if the radionuclide is subjected to temperatures at or above its melting point, but below its boiling point. If the chemical form is not known, use a release fraction of one for any radionuclide that is heated to a temperature of one hundred degrees Celsius or more, boils at a temperature of one hundred degrees Celsius or less, or is intentionally dispersed into the environment. Other release fractions may be used only with the department's approval; or

(b) Perform a back-calculation using measured emission rates and *in situ* measurements of the control equipment efficiencies, as approved by the department; or

(c) Measure the quantities of radionuclides captured in each control device, coupled with *in situ* measurements of the control equipment efficiencies, as approved by the department; or

(d) Sample the effluent upstream from all control devices, as approved by the department; or

(e) Use an alternative method approved by the department.

(22) "Replacement-in-kind" means the substitution of existing systems, equipment, components, or devices of an emission unit's control technology with systems, equipment, components, or devices with equivalent, or better, performance specifications that will perform the same function(s).

(23) "Routine" means:

(a) Maintenance, repair, or replacement-in-kind performed on systems, equipment, components, or devices of an emission unit's abatement technology as a planned part of an established inspection, maintenance, or quality assurance program that does not increase the emission unit's operating design capacity; or

(b) Normal, day-to-day operations of a facility.

(24) "Sealed source" means radioactive material that is permanently bonded or fixed in a capsule or matrix, or radioactive material in airtight containers, designed to prevent release and dispersal of the radioactive material under the most severe conditions encountered in normal use and handling.

(25) "Significant" means the potential-to-emit airborne radioactivity at a rate that could increase the TEDE to the MEI by at least 1.0 mrem/yr as a result of a proposed modification.

(26) "Total effective dose equivalent" (TEDE) means the sum of the dose equivalent due to external exposures and the CEDE due to internal exposures.

(27) "Uranium fuel cycle" means the operations of milling uranium ore, chemical conversion of uranium, isotopic enrichment of uranium, fabrication of uranium fuel, generation of electricity in a nuclear power plant that uses uranium fuel, and reprocessing of spent uranium fuel, to the extent that these operations solely support the production of electrical power for public use.

Excluded are mining operations, waste disposal sites, transportation of any radioactive material, and the reuse of recovered nonuranium special nuclear and by-product materials from the cycle.

Hanford Site License General Conditions and Limitations Applicable to Sources of Radioactive Air Emissions

DOE Federal Facilities 40CFR61 Subparts A, H, and WAC 246-247 Standard Conditions and Limitations

10/20/2017

State and Federally Enforceable

1.0 40CFR61 Subpart A

1.1 List of pollutants and applicability of part 61

The following list presents the substances that, pursuant to section 112 of the Act, have been designated as hazardous air pollutants. The Federal Register citations and dates refer to the publication in which the listing decision was originally published.

Radionuclides (44 FR 76738; Dec. 27, 1979) **(61.01(a))**

This part applies to the owner or operator of any stationary source for which a standard is prescribed under this part. **(61.01(c))**

In addition to complying with the provisions of this part, the owner or operator of a stationary source subject to a standard in this part may be required to obtain an operating permit issued to stationary sources by an authorized State air pollution control agency or by the Administrator of the U.S. Environmental Protection Agency (EPA) pursuant to title V of the Clean Air Act (Act) as amended November 15, 1990 (42 U.S.C. 7661). For more information about obtaining an operating permit see part 70 of this chapter. **(61.01(d))**

1.2 Address

Section 112(d) of the Act directs the Administrator to delegate to each State, when appropriate, the authority to implement and enforce national emission standards for hazardous air pollutants for stationary sources located in such State. If the authority to implement and enforce a standard under this part has been delegated to a State, all information required to be submitted to EPA under paragraph (a) of this section shall also be submitted to the appropriate State agency (provided, that each specific delegation may exempt sources from a certain Federal or State reporting requirement). The Administrator may permit all or some of the information to be submitted to the appropriate State agency only, instead of to EPA and the State agency. If acceptable to both the Administrator and the owner or operator of a source, notifications and reports may be submitted on electronic media. **(61.04(b))**

1.3 Prohibitive activities.

After the effective date of any standard, no owner or operator shall construct or modify any stationary source subject to that standard without first obtaining written approval from the Administrator in accordance with this subpart, except under an exemption granted by the President under section 112(c)(2) of the Act. Sources, the construction or

modification of which commenced after the publication date of the standards proposed to be applicable to the sources, are subject to this prohibition. **(61.05(a))**

After the effective date of any standard, no owner or operator shall operate a new stationary source subject to that standard in violation of the standard, except under an exemption granted by the President under section 112(c)(2) of the Act. **(61.05(b))**

Ninety days after the effective date of any standard, no owner or operator shall operate any existing source subject to that standard in violation of the standard, except under a waiver granted by the Administrator under this part or under an exemption granted by the President under section 112(c)(2) of the Act. **(61.05(c))**

No owner or operator subject to the provisions of this part shall fail to report, revise reports, or report source test results as required under this part. **(61.05(d))**

1.4 Determination of construction or modification.

An owner or operator may submit to the Administrator a written application for a determination of whether actions intended to be taken by the owner or operator constitute construction or modification, or commencement thereof, of a source subject to a standard. The Administrator will notify the owner or operator of his determination within 30 days after receiving sufficient information to evaluate the application. **(61.06)**

1.5 Application for approval of construction or modification.

The owner or operator shall submit to the Administrator an application for approval of the construction of any new source or modification of any existing source **(of radionuclides to the ambient air).** The application shall be submitted before the construction or modification is planned to commence, or within 30 days after the effective date if the construction or modification had commenced before the effective date and initial startup has not occurred. A separate application shall be submitted for each stationary source. **(61.07(a))**

Each application for approval of construction shall include—

(1) The name and address of the applicant;

(2) The location or proposed location of the source; and

(3) Technical information describing the proposed nature, size, design, operating design capacity, and method of operation of the source, including a description of any equipment to be used for control of emissions. Such technical information shall include calculations of emission estimates in sufficient detail to permit assessment of the validity of the calculations. **(61.07(b)**

Each application for approval of modification shall include, in addition to the information required in paragraph (b) of this section—

(1) The precise nature of the proposed changes;

(2) The productive capacity of the source before and after the changes are completed; and

(3) Calculations of estimates of **(radionuclide)** emissions before and after the changes are completed, in sufficient detail to permit assessment of the validity of the calculations. **(61.07(c))**

1.6 Approval of construction or modification

The Administrator will notify the owner or operator of approval or intention to deny approval of construction or modification within 60 days after receipt of sufficient information to evaluate an application under §61.07. **(61.08(a))**

If the Administrator determines that a stationary source for which an application under §61.07 was submitted will not cause emissions in violation of a standard if properly operated, the Administrator will approve the construction or modification. **(61.08(b))**

Before denying any application for approval of construction or modification, the Administrator will notify the applicant of the Administrator's intention to issue the denial together with—

(1) Notice of the information and findings on which the intended denial is based; and

(2) Notice of opportunity for the applicant to present, within such time limit as the Administrator shall specify, additional information or arguments to the Administrator before final action on the application. **(61.08(c))**

A final determination to deny any application for approval will be in writing and will specify the grounds on which the denial is based. The final determination will be made within 60 days of presentation of additional information or arguments, or 60 days after the final date specified for presentation if no presentation is made. **(61.08(d))**

Neither the submission of an application for approval nor the Administrator's approval of construction or modification shall—

(1) Relieve an owner or operator of legal responsibility for compliance with any applicable provisions of this part or of any other applicable Federal, State, or local requirement; or

(2) Prevent the Administrator from implementing or enforcing this part or taking any other action under the Act. **(61.08(e))**

1.7 Notification of startup.

The owner or operator of each stationary source which has an initial startup after the effective date of a standard shall furnish the Administrator with written notification as follows:

(1) A notification of the anticipated date of initial startup of the source not more than 60 days nor less than 30 days before that date.

(2) A notification of the actual date of initial startup of the source within 15 days after that date. **(61.09(a))**

If any State or local agency requires a notice which contains all the information required in the notification in paragraph (a) of this section, sending the Administrator a copy of that notification will satisfy paragraph (a) of this section. **(61.09(b))**

1.8 Waiver of compliance.

Based on the information provided in any request under §61.10, or other information, the Administrator may grant a waiver of compliance with a standard for a period not exceeding 2 years after the effective date of the standard. **(61.11(a))**

The waiver will be in writing and will—

(1) Identify the stationary source covered;

(2) Specify the termination date of the waiver;

(3) Specify dates by which steps toward compliance are to be taken; and

(4) Specify any additional conditions which the Administrator determines necessary to assure installation of the necessary controls within the waiver period and to assure protection of the health of persons during the waiver period. **(61.11(b))**

The Administrator may terminate the waiver at an earlier date than specified if any specification under paragraphs (b)(3) and (b)(4) of this section are not met. **(61.11(c))**

Before denying any request for a waiver, the Administrator will notify the owner or operator making the request of the Administrator's intention to issue the denial, together with—

(1) Notice of the information and findings on which the intended denial is based; and

(2) Notice of opportunity for the owner or operator to present, within the time limit the Administrator specifies, additional information or arguments to the Administrator before final action on the request. **(61.11(d))**

A final determination to deny any request for a waiver will be in writing and will set forth the specific grounds on which the denial is based. The final determination will be made within 60 days after presentation of additional information or argument; or within 60 days after the final date specified for the presentation if no presentation is made. **(61.11(e))**

The granting of a waiver under this section shall not abrogate the Administrator's authority under section 114 of the Act. **(61.11(f))**

1.9 Compliance with standards and maintenance requirements.

Compliance with numerical emission limits shall be determined in accordance with emission tests established in §61.13 or as otherwise specified in an individual subpart. **(61.12(a))**

Compliance with design, equipment, work practice or operational standards shall be determined as specified in an individual subpart **(Subpart H). (61.12(b))**

The owner or operator of each stationary source shall maintain and operate the source, including associated equipment for air pollution control, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operating and maintenance procedures, and inspection of the source. **(61.12(c))**

For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any standard in this part, nothing in this part shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test had been performed. **(61.12(e))**

1.10 Emission tests and waiver of emission tests.

40CFR61.13 Does not apply

1.11 Monitoring requirements.

Unless otherwise specified, this section applies to each monitoring system required under each subpart **(Subpart H)** which requires monitoring. **(61.14(a))**

Each owner or operator shall maintain and operate each monitoring system as specified in the applicable subpart **(Subpart H)** and in a manner consistent with good air pollution control practice for minimizing emissions. Any unavoidable breakdown or malfunction

of the monitoring system should be repaired or adjusted as soon as practicable after its occurrence. The Administrator's determination of whether acceptable operating and maintenance procedures are being used will be based on information which may include, but not be limited to, review of operating and maintenance procedures, manufacturer recommendations and specifications, and inspection of the monitoring system. **(61.14(b))**

When required by the applicable subpart **(Subpart H)**, and at any other time the Administrator may require, the owner or operator of a source being monitored shall conduct a performance evaluation of the monitoring system and furnish the Administrator with a copy of a written report of the results within 60 days of the evaluation. Such a performance evaluation shall be conducted according to the applicable specifications and procedures described in the applicable subpart. The owner or operator of the source shall furnish the Administrator with written notification of the date of the performance evaluation at least 30 days before the evaluation is to begin. **(61.14(c))**

When the effluents from a single source, or from two or more sources subject to the same emission standards, are combined before being released to the atmosphere, the owner or operator shall install a monitoring system on each effluent or on the combined effluent. If two or more sources are not subject to the same emission standards, the owner or operator shall install a separate monitoring system on each effluent, unless otherwise specified. If the applicable standard is a mass emission standard and the effluent from one source is released to the atmosphere through more than one point, the owner or operator shall install a monitoring system at each emission point unless the installation of fewer systems is approved by the Administrator. **(61.14(d))**

The owner or operator of each monitoring system shall reduce the monitoring data as specified in each applicable subpart **(Subpart H)**. Monitoring data recorded during periods of unavoidable monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in any data average. **(61.14(e))**

The owner or operator shall maintain records of monitoring data, monitoring system calibration checks, and the occurrence and duration of any period during which the monitoring system is malfunctioning or inoperative. These records shall be maintained at the source for a minimum of 2 years and made available, upon request, for inspection by the Administrator. **(61.14(f))**

(1) Monitoring shall be conducted as set forth in this section and the applicable subpart (Subpart H) unless the Administrator—

(i) Specifies or approves the use of the specified monitoring requirements and procedures with minor changes in methodology; or

(ii) Approves the use of alternatives to any monitoring requirements or procedures.

(2) If the Administrator finds reasonable grounds to dispute the results obtained by an alternative monitoring method, the Administrator may require the monitoring requirements and procedures specified in this part. **(61.14(g))**

1.12 Modification.

Except as provided under paragraph (d) of this section, any physical or operational change to a stationary source which results in an increase in the rate of emission to the atmosphere of a hazardous pollutant **(radionuclides)** to which a standard applies shall be considered a modification. **(61.15(a))**

Upon modification, an existing source shall become a new source for each hazardous pollutant **(radionuclides in this case)** for which the rate of emission to the atmosphere increases and to which a standard applies. **(61.15(b))**

The following shall not, by themselves, be considered modifications under this part:

(1) Maintenance, repair, and replacement which the Administrator determines to be routine for a source category.

(2) An increase in production rate of a stationary source, if that increase can be accomplished without a capital expenditure on the stationary source.

(3) An increase in the hours of operation.

(5) The relocation or change in ownership of a stationary source. However, such activities must be reported in accordance with §61.10(c). **(61.15(d))**

1.13 Circumvention

No owner or operator shall build, erect, install, or use any article machine, equipment, process, or method, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous dilutants to achieve compliance with a visible emissions standard, and the piecemeal carrying out of an operation to avoid coverage by a standard that applies only to operations larger than a specified size. **(61.19)**

2.0 40CFR61 Subpart H

2.1 Designation of facilities

The provisions of this subpart apply to operations at any facility owned or operated by the Department of Energy that emits any radionuclide other than radon-222 and radon-220 into the air, except that this subpart does not apply to disposal at facilities subject to 40 CFR part 191, subpart B or 40 CFR part 192. **(61.90)**

2.2 Standard

Emissions of radionuclides to the ambient air from Department of Energy facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr. **(61.92)**

2.3 Determining compliance

To determine compliance with the standard, radionuclide emissions shall be determined and effective dose equivalent values to members of the public calculated using EPA approved sampling procedures, computer models CAP–88 or AIRDOS-PC, or other procedures for which EPA has granted prior approval. DOE facilities for which the maximally exposed individual lives within 3 kilometers of all sources of emissions in the facility, may use EPA's COMPLY model and associated procedures for determining dose for purposes of compliance. **(61.93(a))**

2.4 Emissions monitoring and test procedures.

Radionuclides emission rates from existing point sources (stacks or vents) shall be measured in accordance with the following requirements or with the requirements of paragraph (c) of this section, or other procedures for which EPA has granted prior approval:

(1) Effluent flow rate measurements shall be made using the following methods:

(i) Reference Method 2 of appendix A to part 60 of this chapter shall be used to determine velocity and volumetric flow rates for stacks and large vents.

(ii) Reference Method 2A of appendix A to part 60 of this chapter shall be used to measure flow rates through pipes and small vents.

(iii) The frequency of the flow rate measurements shall depend upon the variability of the effluent flow rate. For variable flow rates, continuous or frequent flow rate measurements shall be made. For relatively constant flow rates only periodic measurements are necessary.

(2) Radionuclides shall be directly monitored or extracted, collected and measured using the following methods:

(i) Reference Method 1 of appendix A to part 60 of this chapter shall be used to select monitoring or sampling sites.

(ii) The effluent stream shall be directly monitored continuously with an in-line detector or representative samples of the effluent stream shall be withdrawn continuously from the sampling site following the guidance presented in ANSIN13.1–1969 “Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities” (including the guidance presented in appendix A of ANSIN13.1) (incorporated by reference—see §61.18). The requirements for continuous sampling are applicable to batch processes when the unit is in operation. Periodic sampling (grab samples) may be used only with EPA's prior approval. Such approval may be granted in cases where continuous sampling is not practical and radionuclide emission rates are relatively constant. In such cases, grab samples shall be collected with sufficient frequency so as to provide a representative sample of the emissions.

(iii) Radionuclides shall be collected and measured using procedures based on the principles of measurement described in appendix B, Method 114. Use of methods based on principles of measurement different from those described in appendix B, Method 114 must have prior approval from the Administrator. EPA reserves the right to approve measurement procedures.

(iv) A quality assurance program shall be conducted that meets the performance requirements described in appendix B, Method 114.

(3) When it is impractical to measure the effluent flow rate at an existing source in accordance with the requirements of paragraph (b)(1) of this section or to monitor or sample an effluent stream at an existing source in accordance with the site selection and sample extraction requirements of paragraph (b)(2) of this section, the facility owner or operator may use alternative effluent flow rate measurement procedures or site selection and sample extraction procedures provided that:

(i) It can be shown that the requirements of paragraph (b) (1) or (2) of this section are impractical for the effluent stream.

(ii) The alternative procedure will not significantly underestimate the emissions.

(iii) The alternative procedure is fully documented.

(iv) The owner or operator has received prior approval from EPA.

(4)(i) Radionuclide emission measurements in conformance with the requirements of paragraph (b) of this section shall be made at all release points which have a potential to discharge radionuclides into the air in quantities which could cause an effective dose

equivalent in excess of 1% of the standard. All radionuclides which could contribute greater than 10% of the potential effective dose equivalent for a release point shall be measured. With prior EPA approval, DOE may determine these emissions through alternative procedures. For other release points which have a potential to release radionuclides into the air, periodic confirmatory measurements shall be made to verify the low emissions.

(ii) To determine whether a release point is subject to the emission measurement requirements of paragraph (b) of this section, it is necessary to evaluate the potential for radionuclide emissions for that release point. In evaluating the potential of a release point to discharge radionuclides into the air for the purposes of this section, the estimated radionuclide release rates shall be based on the discharge of the effluent stream that would result if all pollution control equipment did not exist, but the facilities operations were otherwise normal.

(5) Environmental measurements of radionuclide air concentrations at critical receptor locations may be used as an alternative to air dispersion calculations in demonstrating compliance with the standard if the owner or operator meets the following criteria:

(i) The air at the point of measurement shall be continuously sampled for collection of radionuclides.

(ii) Those radionuclides released from the facility, which are the major contributors to the effective dose equivalent must be collected and measured as part of the environmental measurement program.

(iii) Radionuclide concentrations which would cause an effective dose equivalent of 10% of the standard shall be readily detectable and distinguishable from background.

(iv) Net measured radionuclide concentrations shall be compared to the concentration levels in Table 2 of appendix E to determine compliance with the standard. In the case of multiple radionuclides being released from a facility, compliance shall be demonstrated if the value for all radionuclides is less than the concentration level in Table 2, and the sum of the fractions that result when each measured concentration value is divided by the value in Table 2 for each radionuclide is less than 1.

(v) A quality assurance program shall be conducted that meets the performance requirements described in appendix B, Method 114.

(vi) Use of environmental measurements to demonstrate compliance with the standard is subject to prior approval of EPA. Applications for approval shall include a detailed description of the sampling and analytical methodology and show how the above criteria will be met. **(61.93(b))**

Radionuclide emission rates from new point sources (stacks or vents) as defined in subpart A shall be measured in accordance with the following requirements, or other procedures for which EPA has granted prior approval:

(1) Effluent flow rate measurements shall be made using the following methods:

(i) ANSI/HPS N13.1–1999 “Sampling and Monitoring Releases of Airborne Radioactive Substances from the Stacks and Ducts of Nuclear Facilities' (incorporated by reference—see §61.18) shall be used to determine velocity and volumetric flow rates for stacks and large vents.

(ii) ANSI/HPS N13.1–1999 shall be used to measure flow rates through pipes and small vents.

(iii) The frequency of the flow rate measurements shall depend upon variability of the effluent flow rate. For variable flow rates, continuous or frequent flow rate measurements shall be made. For relatively constant flow rates only periodic measurements are necessary.

(2) Radionuclide shall be directly monitored or extracted, collected and measured using the following methods:

(i) ANSI/HPS N13.1–1999 shall be used to select monitoring or sampling sites.

(ii) The effluent stream shall be directly monitored continuously with an in-line detector or representative samples of the effluent stream shall be withdrawn continuously from the sampling site following the guidance presented in ANSI/HPS N13.1–1999. The requirements for continuous sampling are applicable to batch processes when the unit is in operation. Periodic sampling (grab samples) may be used only with EPA's prior approval. Such approval may be granted in cases where continuous sampling is not practical and radionuclide emission rates are relatively constant. In such cases, grab samples shall be collected with sufficient frequency so as to provide a representative sample of the emissions.

(iii) Radionuclides shall be collected and measured using procedures based on the principles of measurement described in appendix B, Method 114 of this part. Use of methods based on principles of measurement different from those described in appendix B, Method 114 of this part must have prior approval from the Administrator. EPA reserves the right to approve measurement procedures.

(iv) A quality assurance program shall be conducted that meets the performance requirements described in ANSI/HPS N13.1–1999. **(61.93(c))**

When it is impractical to measure the effluent flow rate at a source in accordance with the requirements of paragraph (b)(1) or (c) of this section or to monitor or sample an effluent stream at a source in accordance with the site selection and sample extraction

requirements of paragraph (b)(2) or (c) of this section, the facility owner or operator may use alternative effluent flow rate measurement procedures or site selection and sample extraction procedures provided that:

(1) It can be shown that the requirements of paragraph (b)(1) or (2) or (c) of this section are impractical for the effluent stream.

(2) The alternative procedure will not significantly underestimate the emissions.

(3) The alternative procedure is fully documented.

(4) The owner or operator has received prior approval from EPA. (61.93(d))

Radionuclide emission measurements in conformance with the requirements of paragraph (b) or (c) of this section shall be made at all release points that have a potential to discharge radionuclides into the air in quantities that could cause an effective dose equivalent in excess of 1% of the standard. All radionuclides that could contribute greater than 10% of the potential effective dose equivalent for a release point shall be measured. With prior EPA approval, DOE may determine these emissions through alternative procedures. For other release points that have a potential to release radionuclides into the air, periodic confirmatory measurements shall be made to verify the low emissions. **(61.93(e))**

To determine whether a release point is subject to the emission measurement requirements of paragraph (b) or (c) of this section, it is necessary to evaluate the potential for radionuclide emissions for that release point. In evaluating the potential of a release point to discharge radionuclides into the air for the purposes of this section, the estimated radionuclide release rates shall be based on the discharge of the effluent stream that would result if all pollution control equipment did not exist, but the facilities operations were otherwise normal. **(61.93(f))**

Environmental measurements of radionuclide air concentrations at critical receptor locations may be used as an alternative to air dispersion calculations in demonstrating compliance with the standard if the owner or operator meets the following criteria:

(1) The air at the point of measurement shall be continuously sampled for collection of radionuclides.

(2) Those radionuclides released from the facility that are the major contributors to the effective dose equivalent must be collected and measured as part of the environmental measurement program.

(3) Radionuclide concentrations that would cause an effective dose equivalent of 10% of the standard shall be readily detectable and distinguishable from background.

(4) Net measured radionuclide concentrations shall be compared to the concentration levels in Table 2 appendix E of this part to determine compliance with the standard. In the case of multiple radionuclides being released from a facility, compliance shall be demonstrated if the value for all radionuclides is less than the concentration level in Table 2 of appendix E of this part, and the sum of the fractions that result when each measured concentration value is divided by the value in Table 2 of appendix E of this part for each radionuclide is less than 1.

(5) A quality assurance program shall be conducted that meets the performance requirements described in appendix B, Method 114 of this part.

(6) Use of environmental measurements to demonstrate compliance with the standard is subject to prior approval of EPA. Applications for approval shall include a detailed description of the sampling and analytical methodology and show how the above criteria will be met. **(61.93(g))**

2.5 Compliance and reporting

Compliance with this standard shall be determined by calculating the highest effective dose equivalent to any member of the public at any offsite point where there is a residence, school, business or office. The owners or operators of each facility shall submit an annual report to both EPA headquarters and the appropriate regional office by June 30 which includes the results of the monitoring as recorded in DOE's Effluent Information System and the dose calculations required by §61.93(a) for the previous calendar year.

In addition to the requirements of paragraph (a) of this section, an annual report shall include the following information:

(1) The name and location of the facility.

(2) A list of the radioactive materials used at the facility.

(3) A description of the handling and processing that the radioactive materials undergo at the facility.

(4) A list of the stacks or vents or other points where radioactive materials are released to the atmosphere.

(5) A description of the effluent controls that are used on each stack, vent, or other release point and an estimate of the efficiency of each control device.

(6) Distances from the points of release to the nearest residence, school, business or office and the nearest farms producing vegetables, milk, and meat.

(7) The values used for all other user-supplied input parameters for the computer models (e.g., meteorological data) and the source of these data.

(8) A brief description of all construction and modifications which were completed in the calendar year for which the report is prepared, but for which the requirement to apply for approval to construct or modify was waived under §61.96 and associated documentation developed by DOE to support the waiver. EPA reserves the right to require that DOE send to EPA all the information that normally would be required in an application to construct or modify, following receipt of the description and supporting documentation.

(9) Each report shall be signed and dated by a corporate officer or public official in charge of the facility and contain the following declaration immediately above the signature line: "I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See, 18 U.S.C. 1001." **(61.94(b))**

If the facility is not in compliance with the emission limits of §61.92 in the calendar year covered by the report, then the facility must commence reporting to the Administrator on a monthly basis the information listed in paragraph (b) of this section, for the preceding month. These reports will start the month immediately following the submittal of the annual report for the year in noncompliance and will be due 30 days following the end of each month. This increased level of reporting will continue until the Administrator has determined that the monthly reports are no longer necessary. In addition to all the information required in paragraph (b) of this section, monthly reports shall also include the following information:

(1) All controls or other changes in operation of the facility that will be or are being installed to bring the facility into compliance.

(2) If the facility is under a judicial or administrative enforcement decree, the report will describe the facilities performance under the terms of the decree. **61.94(c))**

In those instances where the information requested is classified, such information will be made available to EPA separate from the report and will be handled and controlled according to applicable security and classification regulations and requirements. **(61.94(d))**

2.6 Recordkeeping requirements.

All facilities must maintain records documenting the source of input parameters including the results of all measurements upon which they are based, the calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine effective dose equivalent. This documentation should be sufficient to allow an

independent auditor to verify the accuracy of the determination made concerning the facility's compliance with the standard. These records must be kept at the site of the facility for at least five years and, upon request, be made available for inspection by the Administrator, or his authorized representative. **(61.95)**

2.7 Applications to construct or modify

In addition to any activity that is defined as construction under 40 CFR part 61, subpart A, any fabrication, erection or installation of a new building or structure within a facility that emits radionuclides is also defined as new construction for purposes of 40 CFR part 61, subpart A. **(61.96(a))**

An application for approval under §61.07 or notification of startup under §61.09 does not need to be filed for any new construction of or modification within an existing facility if the effective dose equivalent, caused by all emissions from the new construction or modification, is less than 1% of the standard prescribed in §61.92. For purposes of this paragraph the effective dose equivalent shall be calculated using the source term derived using appendix D as input to the dispersion and other computer models described in §61.93. DOE may, with prior approval from EPA, use another procedure for estimating the source term for use in this paragraph. A facility is eligible for this exemption only if, based on its last annual report, the facility is in compliance with this subpart. **(61.96(b))**
[[*This applies to 40CFR61 subpart H only. State exemption process requires more information for exemption determination.*]]

Conditions to approvals granted under §61.08 will not contain requirements for post approval reporting on operating conditions beyond those specified in §61.94. **(61.96(c))**
[[*This applies to 40CFR61 subpart H approvals granted under 61.08.*]]

2.8 Exemption from the reporting and testing requirements of 40CFR61.10

All facilities designated under this subpart are exempt from the reporting requirements of 40 CFR 61.10. **(61.97)**

State Enforceable ONLY

3.0 WAC 246-247 (June 13, 2017)

3.1 Applicability

The standards and requirements of this chapter apply to point sources, nonpoint sources, and fugitive emissions. **(WAC 246-247-010(2))**

The standards and requirements of this chapter apply to stationary and mobile emission units, whether temporary or permanent. **(WAC 246-247-010(3))**

The control technology standards and requirements of this chapter apply to the abatement technology and indication devices of facilities and emission units subject to this chapter. Control technology requirements apply from entry of radionuclides into the ventilated vapor space to the point of release to the environment. **(WAC 246-247-010(4))**

3.2 Exemptions

The following types of facilities or sources of radiation are exempt from the requirements of this chapter because they release no airborne radioactivity, or they prima facie comply with the standards in WAC 246-247-040, or they are already adequately regulated under other requirements:

(a) Users of only sealed sources;

(b) Sealed sources;

(c) Accelerators less than 200 MeV;

(d) Nuclear-powered vessels underway or moored dockside unless under a maintenance condition with a potential-to-emit;

(e) Uranium mill tailings piles disposed of under 40 CFR Part 192

(WAC 246-247-020(1))

Any exemptions shall be consistent with 40 CFR 61. No exemptions from the standards in WAC 246-247-040 will be granted.

A federal facility may request exemption from some of the requirements of WAC 246-247-060 and 246-247-075 if the potential-to-emit, for the emission unit(s) under consideration, results in a TEDE to the MEI from all pathways less than 0.1 mrem/yr. **(WAC 246-247-020(c))**

The facility shall submit all the data necessary to make the exemption determinations of (b) and (c) of this subsection. The department shall determine if any exemptions apply. **(WAC 246-247-020(2)(d))**

The department may require a facility with exempt emission units to submit a radioactive air emissions report to confirm compliance with applicable standards. The department reserves the right to conduct inspections and audits of the facility to confirm the status of its exempt emission units. **(WAC 246-247-020(3))**

(4) Naturally occurring airborne radionuclides are exempt from the requirements of this chapter unless the concentrations or rates of emissions have been enhanced by industrial processes. **(WAC 246-247-020(4))**

3.3 National standards adopted by reference for sources of radionuclulide emissions

The following federal standards, as in effect on July 1, 2017, are adopted by reference except as provided in paragraphs (2) and (3) below.
These standards apply in addition to other requirements of this Chapter.

(a) For federal facilities:

(i) 40 CFR Part 61, Subpart A - General Provisions

(ii) 40 CFR Part 61, Subpart H - National Emission Standards for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities

(WAC 246-247-035(1))

References to “Administrator” or “EPA” in 40 CFR Part 61 include the Department of Health except in any section of 40 CFR Part 61 for which a federal rule or delegation indicates that the authority will not be delegated to the State. **(WAC 246-247-035(2))**

Any change or alternative to standards, emission monitoring and test procedures, compliance and reporting requirements, or recordkeeping requirements must be approved by EPA. **(WAC 246-247-035(3))**

3.4 General standards

Standards for radioactive air emissions in the state of Washington are contained in WAC 173-480-040, 173-480-050, and 173-480-060. Additional standards for emissions of radionuclides other than radon from United States Department of Energy facilities are

contained in 40 CFR Part 61, subparts H (as effective on October 9, 2002). **(WAC 246-247-040(1))**

All new construction and significant modifications of emission units commenced after August 10, 1988 (the date this chapter originally became effective) shall utilize BARCT (see Appendix B). **(WAC 246-247-040(3))**

All existing emission units and nonsignificant modifications shall utilize ALARACT (see Appendix C). **(WAC 246-247-040(4))**

In order to implement these standards, the department may set limits on emission rates for specific radionuclides from specific emission units and/or set requirements and limitations on the operation of the emission unit(s) as specified in a license. **(WAC 246-247-040(5))**

All emissions of radionuclides, including those due to emergency conditions resulting from startup, shutdown, maintenance activities, or process upsets are subject to the standards of this section and, therefore, subject to the enforcement actions of WAC 246-247-100. **(WAC 246-247-040(6))**

3.5 Applications, registration and licensing

For those facilities subject to the operating permit regulations in chapter 173-401 WAC, the radioactive air emissions license will be incorporated as an applicable portion of the air operating permit issued by the department of ecology or a local air pollution control authority. The department will be responsible for determining the facility's compliance with and enforcing the requirements of the radioactive air emissions license. **(WAC 2460-247-060)**

Requirements for new construction or modification of emission units.

(a) Early in the design phase, the applicant shall submit a NOC containing the information required in Appendix A **(WAC 246-247)**.

(b) Within thirty days of receipt of the NOC, the department shall inform the applicant if additional information is required. The department may determine, on the basis of the information submitted, that the requirements of BARCT or ALARACT have been met, or may require the applicant to submit a BARCT or ALARACT demonstration compatible with Appendix B or C, respectively.

(c) Within sixty days of receipt of all required information, the department shall issue an approval or denial to construct. The department may require changes to the final proposed control technology.

(d) The applicant may request a phased approval process by so stating and submitting a limited application. The department may grant a conditional approval to construct for such activities as would not preclude the construction or installation of any control or monitoring equipment required after review of the completed application.

(e) The department shall issue a license, or amend an existing license, authorizing operation of the emission unit(s) when the proposed new construction or modification is complete. For facilities subject to the air operating permit requirements of chapter 173-401 WAC, the license shall become part of the air operating permit issued by the department of ecology or a local air pollution control authority. For new construction, this action shall constitute registration of the emission unit(s). **(WAC 246-247-060 (1))**

Requirements for modification of unregistered emission units that are not exempt from these regulations.

(a) The applicant shall submit an application containing the information required in WAC 246-247 Appendix A.

(b) Within thirty days of receipt of the application, the department shall inform the applicant if additional information is required. The department may determine, on the basis of the information submitted, that the requirements of BARCT or ALARACT have been met, or may require the applicant to submit a BARCT or ALARACT demonstration compatible with Appendix B or C, respectively.

(c) Within sixty days of receipt of all required information, the department shall issue or amend the license. For facilities subject to the air operating permit requirements of chapter 173-401 WAC, the license shall become part of the air operating permit issued by the department of ecology or a local air pollution control authority. This action shall constitute registration of the emission unit(s). A determination of noncompliance may result in the issuance of a notice of violation.

(d) The department reserves the right to require the owner of an existing, unregistered emission unit to make modifications necessary to comply with the applicable standards of WAC 246-247-040. **(WAC 246-247-060(2))**

If an emission unit is in violation of any standards contained in WAC 246-247-040, the facility shall either submit a compliance plan which describes how it intends to achieve compliance with the standards, and/or cease operation of the emission unit(s). The facility shall submit the compliance plan within forty-five days of the notice of violation. The cessation of operation of the emission unit(s) shall not necessarily exempt the facility from the requirements of this chapter if active or passive ventilation and radioactive air emission controls will still be required. The department reserves the

right to take further enforcement action, if necessary, in accordance with WAC 246-247-100. **(WAC 246-247-060(3))**

The facility shall notify the department at least seven calendar days prior to any planned preoperational tests of new or modified emission units that involve emissions control, monitoring, or containment systems of the emission unit(s). The department reserves the right to witness or require preoperational tests involving the emissions control, monitoring, or containment systems of the emission unit(s). **(WAC 246-247-060(4))**

The license shall specify the requirements and limitations of operation to assure compliance with this chapter. The facility shall comply with the requirements and limitations of the license. **(WAC 246-247-060(5))**

All radioactive air emissions licenses issued by the department, except those issued to radioactive materials licensees, shall have an expiration date of five years from date of issuance or as specified in the air operating permit. **(WAC 246-247-060(6))**

Each federal facility that comes under the authority of this chapter shall hold one license for each site, base, or installation. When applicable, the license shall be part of the facility's air operating permit. **(WAC-246-247-060(7))**

Facilities may request a single categorical license which identifies limits and conditions of operation for similar multipurpose temporary and/or portable emission units. When applicable, the license shall be part of the facility's air operating permit. **(WAC 246-247-060(8))**

All facilities with licensed emission units, except for radioactive materials licensees, shall submit a request to the department for renewal of their radioactive air emissions license at least sixty days prior to expiration of the license or as required by the air operating permit. All renewal requests shall include a summary of the operational status of all emission units, the status of facility compliance with the standards of WAC 246-247-040, and the status of any corrective actions necessary to achieve compliance with the requirements of this chapter. Facilities with licensed emission units that also hold a radioactive materials license issued by the department shall submit this information along with their radioactive material license renewal submittal. If the department is unable to renew a radioactive air emissions license before its expiration date, the existing license, with all of its requirements and limitations, remains in force until the department either renews or revokes the license. **(WAC 246-247-060(9))**

3.6 Fees

For non-air operating permit costs, all facilities under the authority of this chapter shall submit fees in accordance with WAC 246-254-160. **(WAC 246-247-065(1))**

Those facilities required by WAC 246-254-160(2) to submit an application fee, shall submit the fee with the application. **(WAC 246-247-065(2))**

3.7 Monitoring, testing and quality assurance

Equipment and procedures used for the continuous monitoring of radioactive air emissions shall conform, ***as applicable***, to the guidance contained in ANSI N13.1, ANSI N42.18, ANSI N323, ANSI N317, reference methods 1, 1A, 2, 2A, 2C, 2D, 4, 5, and 17 of 40 CFR Part 60, Appendix A, 40 CFR Part 52, Appendix E, and any other methods approved by the department. **(WAC 246-247-075(2))**

The operator of an emission unit with a potential-to-emit of less than 0.1 mrem/yr TEDE to the MEI may estimate those radionuclide emissions, in lieu of monitoring, in accordance with 40 CFR 61 Appendix D, or other procedure approved by the department. The department may require periodic confirmatory measurements (e.g., grab samples) during routine operations to verify the low emissions. Methods to implement periodic confirmatory monitoring shall be approved by the department. **(WAC 246-247-075(3))**

The department may allow a facility to use alternative monitoring procedures or methods if continuous monitoring is not a feasible or reasonable requirement. **(WAC 246-247-075(4))**

Licensed facilities shall conduct and document a quality assurance program. Except for those types of facilities specified in subsection (5) of this section, the quality assurance program shall be compatible with applicable national standards such as ANSI/ASME NQA-1-1988, ANSI/ASME NQA-2-1986, QA/R-2, and QA/R-5. **(WAC 246-247-075(6))**

Facilities shall monitor nonpoint and fugitive emissions of radioactive material. **(WAC 246-247-075(8))**

The department may conduct an environmental surveillance program to ensure that radiation doses to the public from emission units are in compliance with applicable standards. The department may require the operator of any emission unit to conduct stack sampling, ambient air monitoring, or other testing as necessary to demonstrate compliance with the standards in WAC 246-247-040. **(WAC 246-247-075(9))**

The department may require the owner or operator of an emission unit to make provision, at existing emission unit sampling stations, for the department to take split or collocated samples of the emissions. **(WAC 246-247-075(10))**

The planning for any proposed new construction or significant modification of the emission unit must address accidental releases with a probability of occurrence during the expected life of the emission unit of greater than one percent. **(WAC 246-247-075(11))**

All facilities must be able to demonstrate that appropriate supervisors and workers are adequately trained in the use and maintenance of emission control and monitoring

systems, and in the performance of associated test and emergency response procedures. **(WAC 246-247-075(12))**

All facilities must be able to demonstrate the reliability and accuracy of the radioactive air emissions monitoring data. **(WAC 246-247-075(13))**

A facility owner or operator, or any other person may not render inaccurate any monitoring device or method required under chapter 70.98 RCW, or any ordinance, resolution, regulation, permit, or order in force pursuant thereto. **(WAC 246-247-075(14))**

3.8 Inspections, reporting, and recordkeeping

The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data, and other records related to compliance with the requirements of this chapter. The department may require a demonstration of ALARACT at any time. **(WAC 246-247-080(1))**

The facility shall annually submit to the department the information requirements adopted in subsection (2) of this section, as applicable, along with the following additional information, as applicable:

(a) The results of emission measurements for those emission units subject only to periodic confirmatory measurements;

(b) Wind rose or joint frequency table;

(c) Annual average ambient temperature;

(d) Annual average emission unit gas temperature, if available;

(e) Annual total rainfall;

(f) Annual average emission unit flow rate and total volume of air released during the calendar year.

If this additional information is available in another annual report, the facility may instead provide a copy of that report along with the information requirements in this subsection. Annual reports are due by June 30 for the previous calendar year's operations. **(WAC 246-247-080(3))**

Any report or application that contains proprietary or procurement-sensitive information shall be submitted to the department with those portions so designated. The department shall hold this information confidential, unless required to release the information pursuant to laws, regulations, or court order. **(WAC 246-247-080(4))**

The facility shall notify the department within twenty-four hours of any shutdown, or of any transient abnormal condition lasting more than four hours or other change in facility operations which, if allowed to persist, would result in emissions of radioactive material in excess of applicable standards or license requirements. If requested by the department, the facility shall submit a written report within ten days including known causes, corrective actions taken, and any preventive measures taken or planned to minimize or eliminate the chance of recurrence. **(WAC 246-247-080(5))**

The facility shall file a report of closure with the department whenever operations producing emissions of radioactive material are permanently ceased at any emission unit (except temporary emission units) regulated under this chapter. The closure report shall indicate whether, despite cessation of operations, there is still a potential for radioactive air emissions and a need for an active or passive ventilation system with emission control and/or monitoring devices. If decommissioning is planned and will constitute a modification, a NOC is required, as applicable, in accordance with WAC 246-247-060. **(WAC 246-247-080(6))**

The facility shall maintain a log for each emission unit that has received categorical approval under WAC 246-247-060(8). The log shall contain records of important operations parameters including the date, location, and duration of the release, measured or calculated radionuclide concentrations, the type of emissions (liquid, gaseous, solid), and the type of emission control and monitoring equipment. **(WAC 246-247-080(7))**

The facility shall maintain readily retrievable storage areas for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years. **(WAC 246-247-080(8))**

The facility shall ensure all emission units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restrictions or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. **(WAC 246-247-080(9))**

The facility shall make available, in a timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know. **(WAC 246-247-080(10))**

The facility shall respond in writing in a timely manner, or within a time limit set by the department, to inspection results which require the facility to implement corrective actions or any other actions so directed by the department. **(WAC 246-247-080(11))**

A facility owner or operator, or any other person may not make any false material statement, representation, or certification in any form, notice or report required under chapter 70.98, or any ordinance, resolution, regulation, permit, or order in force pursuant thereto. **(WAC 246-247-080(12))**

3.9 Compliance determination for existing emission units and facilities

All procedures for determining compliance with the dose equivalent standards of 40 CFR 61, subparts H (as effective on October 9, 2002), are adopted by reference, as applicable as specified by the referenced subparts. **(WAC 246-247-085(1))**

Facilities subject to 40 CFR 61 shall use computer codes or procedures approved by the EPA to determine the TEDE to the MEI; all other facilities shall use computer codes or procedures approved by the department. **(WAC 246-247-085(2))**

The determination of compliance with the dose equivalent standard of WAC 246-247-040 shall include all radioactive air emissions resulting from routine and nonroutine operations for the past calendar year. **(WAC 246-247-085(3))**

3.10 Enforcement actions

In accordance with RCW 70.94.422, the department may take any of the following actions to enforce compliance with the provisions of this chapter:

(a) Notice of violation and compliance order (RCW 70.94.332).

(b) Restraining order or temporary or permanent injunction (RCW 70.94.425; also RCW 70.98.140).

(c) Penalty: Fine and/or imprisonment (RCW 70.94.430).

(d) Civil penalty: Up to ten thousand dollars for each day of continued noncompliance (RCW 70.94.431 (1) through (7)).

(e) Assurance of discontinuance (RCW 70.94.435).

(WAC 246-247-100(1))

The department, in accordance with RCW 70.98.050 (4)(l), may issue subpoenas in order to compel attendance of witnesses and/or production of records or documents in connection with any adjudicative or other administrative proceeding. **(WAC 246-247-100(2))**

The department, in accordance with RCW 70.98.160, may impound sources of ionizing radiation. **(WAC 246-247-100(3))**

The secretary of the department, in accordance with RCW 43.70.190, is authorized to bring an action to prohibit a violation or a threatened violation of any department rules or regulation, or to bring any legal proceeding authorized by law to a county superior court. **(WAC 246-247-100(4))**

Any party, against which an enforcement action is brought by the department, has the right to submit an application for the adjudicative process in accordance with chapter 246-10 WAC and chapter 34.05 RCW. **(WAC 246-247-100(5))**

3.11 Appendix A -- Application information requirements.

(1) Name and address of the facility, and location (latitude and longitude) of the emission unit(s).

(2) Name, title, address, and phone number of the responsible manager.

(3) Identify the type of proposed action for which this application is submitted:

(a) Construction of new emission unit(s);

(b) Modification of existing emission unit(s); identify whether this is a significant modification;

(c) Modification of existing unit(s), unregistered.

(4) If this project is subject to the requirements of the State Environmental Policy Act (SEPA) contained in chapter 197-11 WAC, provide the name of the lead agency, lead agency contact person, and their phone number.

(5) Describe the chemical and physical processes upstream of the emission unit(s).

(6) Describe the existing and proposed (as applicable) abatement technology. Describe the basis for the use of the proposed system. Include expected efficiency of each control device, and the annual average volumetric flow rate(s) in meters3/sec for the emission unit(s).

(7) Provide conceptual drawings showing all applicable control technology components from the point of entry of radionuclides into the vapor space to release to the environment.

(8) Identify each radionuclide that could contribute greater than ten percent of the potential-to-emit TEDE to the MEI, or greater than 0.1 mrem/yr potential-to-emit TEDE to the MEI.

(9) Describe the effluent monitoring system for the proposed control system. Describe each piece of monitoring equipment and its monitoring capability, including detection limits, for each radionuclide that could contribute greater than ten percent of the potential-to-emit TEDE to the MEI, or greater than 0.1 mrem/yr potential-to-emit TEDE to the MEI, or greater than twenty-five percent of the TEDE to the MEI, after controls. Describe the method for monitoring or calculating those radionuclide emissions. Describe the method with detail sufficient to demonstrate compliance with the applicable requirements.

(10) Indicate the annual possession quantity for each radionuclide.

(11) Indicate the physical form of each radionuclide in inventory: Solid, particulate solids, liquid, or gas.

(12) Indicate the release form of each radionuclide in inventory:
Particulate solids, vapor, or gas. Give the chemical form and ICRP 30 solubility class, if known.

(13) Release rates.

(a) New emission unit(s): Give predicted release rates without any emissions control equipment (the potential-to-emit) and with the proposed control equipment using the efficiencies described in subsection (6) of this section.

(b) Modified emission unit(s): Give predicted release rates without any emissions control equipment (the potential-to-emit) and with the existing and proposed control equipment using the efficiencies described in subsection (6) of this section. Provide the latest year's emissions data or emissions estimates.

In all cases, indicate whether the emission unit is operating in a batch or continuous mode.

(14) Identify the MEI by distance and direction from the emission unit(s). The MEI is determined by considering distance, windrose data, presence of vegetable gardens, and meat or milk producing animals at unrestricted areas surrounding the emission unit.

(15) Calculate the TEDE to the MEI using an approved procedure (see WAC 246-247-085). For each radionuclide identified in subsection (8) of this section, determine the TEDE to the MEI for existing and proposed emission controls, and without any emission controls (the potential-to-emit) using the release rates from subsection (13) of this section. Provide all input data used in the calculations.

(16) Provide cost factors for construction, operation, and maintenance of the proposed control technology components and system, if a BARCT or ALARACT demonstration is not submitted with the NOC.

(17) Provide an estimate of the lifetime for the facility process with the emission rates provided in this application.

(18) Indicate which of the following control technology standards have been considered and will be complied with in the design and operation of new or modified emission unit(s) described in this application:

ASME/ANSI AG-1, Code on Nuclear Air and Gas Treatment (where there are conflicts in standards with the other listed references, this standard shall take precedence)

ASME/ANSI N509, Nuclear Power Plant Air-Cleaning Units and Components

ASME/ANSI N510, Testing of Nuclear Air Treatment Systems

ANSI/ASME NQA-1, Quality Assurance Program Requirements for Nuclear Facilities

40 CFR 60, Appendix A, Methods 1, 1A, 2, 2A, 2C, 2D, 4, 5, and 17

ANSI/HPS N13.1.1999, Sampling and Monitoring Releases of Airborne Radioactive Substances from the Stacks and Ducts of Nuclear Facilities if the unit's potential-to-emit exceeds 0.1 mrem/yr TEDE to the MEI and the unit is required to meet ANSI/HPS N13.1.1999 under federal regulations.

ANSI N13.1.1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities if the unit's potential-to-emit exceeds 0.1 mrem/yr TEDE to the MEI and the unit is not required to meet ANSI/HPS N13.1.1999 under federal regulations.

For each standard not so indicated, give reason(s) to support adequacy of the design and operation of the emission unit(s) as proposed. **(WAC 246-247-110)**

4.0 Quality Assurance Requirements for PCM Using Stack Sampling (AIR 05-303 dated March 18, 2005) State Only Requirement. (WAC 246-247-040(5) and 060(5))

The following is being provided as clarification to those licenses issued for all minor/point source emission units that use sample extraction as the approved form of periodic confirmatory measurement. This clarification deals with the “State Only” requirement concerning 40 CFR 61, Appendix B, Method 114 for minor/point sources.

When the quality assurance method referenced in Attachment 2 of the Hanford Site Air Operating Permit, 00-05-006, states either Method 114 or Method 114(3) the following will be the meaning:

> Actions to assure quality of periodic confirmatory measurement shall be as follows:
> (1) Implementation of quality checks supporting the periodic confirmatory measurements. These checks shall assure that the emissions measurements are sufficient to verify low emissions;
> (2) Stack flow measurements will be conducted annually;
> (3) An annual calibration will be performed on the existing sample flow meter or an annual function check will be performed if the flow meter is replaced by either a rotameter or a magnahelic gauge;
> (4) The effluent samples will be collected on standard (very high efficiency particulate air) sample filters;
> (5) The laboratory sample analysis will meet the requirements of Appendix B, Method 114(3); and
> (6) The following items shall be documented in a NESHAP Quality Assurance Project Plan or other documents:
> (i) The sample collection and analysis procedures used;
> (ii) The quality control program for evaluating and tracking the quality of the periodic confirmatory measurement data against preset criteria. The quality control program should include, where applicable, a system of replicates, spiked samples, split samples, blanks and control charts. The number and frequency of such quality control checks shall be identified; and
> (iii) The sample tracking system to provide positive identification of samples and data through all phases of the sample collection, analysis, and reporting system. Sample handling and preservation procedures to maintain the integrity of the samples during collection, storage, and analysis.

5.0 Method for Monitoring and Reporting of Diffuse and Fugitive Sources and Emissions. (WAC 246-247-040(5) and 060(5))

5.1 Diffuse and Fugitive Sources at Hanford

The ambient air monitoring conducted at the Hanford Site has been accepted by the department as the method for demonstrating compliance to emissions limits for diffuse and fugitive sources. Those sources with Emission Unit specific conditions and limitations within the FF-01 License must be monitored; meet the applicable quality assurance and analysis requirements. All required ambient air monitors shall be identified along with their data measurements in the annual Radionuclide Air Emissions Report.

5.1.1 Monitoring

Monitoring of diffuse and fugitive emissions must be conducted to estimate public dose. This is accomplished by conducting monitoring or other testing as required by the department (WAC 246-247-075(8) and (9). Environmental air pathways are monitored near facilities emitting radionuclides from either point sources or diffuse and fugitive sources. The environmental air pathways for air emissions from the Hanford Site must be monitored using a network of ambient air samplers.

5.1.2 Near-Facility Monitoring

Near-facility environmental monitoring is defined as the Department of Energy's monitoring on the Hanford Site near facilities with radioactive materials that are potentially dispersible. Monitoring locations are associated mostly with major nuclear facilities and waste storage or disposal facilities such as container storage, burial grounds, underground tanks (i.e., Tank Farms in the 200 Areas), ponds, cribs, trenches, and ditches.

In accordance with the definition of "Monitoring" provided in WAC 246-247-030(17), required monitoring activities include the measurement of radionuclides in ambient air. Samples are collected from known or expected transport pathways, which are generally downwind of potential or actual airborne release points and down-gradient of liquid discharges. The accepted primary method of monitoring diffuse and fugitive emissions is ambient air sampling, with other media samples (e.g., surface soil, vegetation for deposition, radiological surveys and thermoluminescent dosimeters) used as qualitative indicators.

5.1.3 Site-Wide Monitoring

In addition, the Department of Energy conducts air monitoring at site-wide locations away from the facilities, offsite around the perimeter of the Hanford Site, and in nearby and distant communities. Because a person could live as close to the Hanford Site as some of the perimeter stations, their data represent maximum exposures for a member of the public. Therefore, ambient air sampling data from the perimeter locations most closely reflect the actual impacts of radionuclide air emissions from point sources and diffuse and fugitive sources at the Hanford Site.

5.1.4 Quality Assurance and Analysis

All required ambient air samples collected and analyzed must be compatible with the quality assurance requirements of national standards such as NQA-1, EPA QA/R-5, and Method 114 as applicable. Near-facility ambient air samples from individual stations must be composited at a frequency no greater than 6 months. Analysis of other media samples will be conducted at labs with the appropriate quality assurance programs in-place.

5.1.5 Reporting

The average results from the analysis of composite ambient air samples must be reported on an annual basis as required by WAC 246-247-080.

5.1.5.1 Near Facility Monitoring and Reporting

Comparison against 10% of the values listed in Table 2 of 40 CFR 61 Appendix E must be performed. Any analytical result that exceeds these values will be reported to the department. Notification may take the form of an email. These comparisons shall be used to demonstrate that

activities being conducted under various approvals are being maintained as ALARACT or BARCT.

5.1.5.2 Hanford Facility Off-site Diffuse and Fugitive Ambient Air Concentration Procedure for Annual Reporting of Emissions

For purposes of annual reporting of emissions, any emissions from diffuse and fugitive sources are estimated from ambient air monitoring data collected at the Hanford Site perimeter. Radionuclide air concentrations resulting from monitored stack emissions at Hanford facilities and other nearby non-DOE sources are calculated for each of the perimeter sample locations using the CAP88-PC atmospheric dispersion modeling code. The combined contributions to airborne radionuclide concentrations attributable to the stack emissions from these sources will be subtracted from the ambient air sampling results. Averaged regional background concentrations for each radionuclide will be calculated from the air sample results obtained at distant community sampling stations located outside the 80-km (50-mile) radius from Hanford sources. The average background concentration at these stations will also be subtracted from the ambient monitoring results at Hanford perimeter stations. The air concentrations at the site perimeter, corrected as described for monitored emissions sources and background concentrations, are assumed to be attributable to emissions from diffuse sources.

Annual emissions from diffuse and fugitive sources will be estimated using the corrected perimeter air concentrations attributable to fugitive emissions, and by performing a back-calculation using CAP88-PC. For purposes of conservatism in estimating emissions, the 200 West Area near the center of the Hanford Site is assumed to be the source of all diffuse and fugitive emissions. The average aggregate emissions from diffuse sources will then be used to estimate the dose at the Hanford Site perimeter with the CAP88-PC code. The annual Hanford Site Radionuclide Air Emissions Report will contain results for the perimeter location having the highest dose and separately the dose at the location of the maximally exposed member of the public from monitored stack sources. The maximum combined dose to a member of the public from monitored stack emissions and potential diffuse source emissions will be reported to demonstrate compliance with the 10 mrem/year standard in 40 CFR Part 61, Subpart H, as adopted by WAC 246-247.

5.1.6 Additional Monitoring Requirements for Specific Activities with Diffuse/Fugitive Emissions

Additional monitoring or testing requirements (issued as Notice of Construction Approval Conditions and Limitations) may be placed on emissions units for a specific activity as authorized in WAC 246-247-075(9).

5.1.7 Changes to the Diffuse and Fugitive Environmental Monitoring

Prior to making a change (i.e., moving, or removing air sample locations, or changing the sampling period) to the accepted periodic confirmatory measurement (for minor diffuse and fugitive sources) or continuous measurement (for major diffuse and fugitive sources), the Department of Energy shall provide a written request describing the change to the Department of Health, Air Emissions and Defense Waste Section for approval. The request for approval may take the form of an email or formal letter.

5.1.8 Air Monitoring Stations

Enclosure 4, "Air Monitoring Stations", Table 4-1 lists those monitoring stations subject to the applicable portions of Section 5.0, while Table 4-2 identifies those that are not. Clarification bullets are contained in Enclosure 4

6.0 Interpretation of "Continuous" for Office of River Protection Emission Units (WAC 246-247-040(5) and 060(5))

Tank Farm Emission Units - Continuous Sampling (PIC 1 and 2) or monitoring (PIC 1) Section 4.4 and Table 3 of ANSI N13.1 1999

For the case of interruption of "Continuous" sampling of an effluent stream as required by this license as it applies solely to the Tank Farms emission units operated by the DOE Office of River Protection contractors and not to other contractors on the Hanford Site;

1) As defined by this license and the license reference to ANSI N13.1 1999, continuous sampling for a PIC1 or 2- exhauster shall mean sampler availability greater than 95% of the time the associated exhauster is operating. Lack of availability shall not exceed three (3) days (72 hours) per calendar month or a maximum of 18 days (432 hours) per calendar year and shall be tracked in the operating record.

2) The facility shall notify the department within 24 hours, or the next business day in the event of;

a. an unplanned failure, or degraded performance, of the record sampling system lasting more than 4 hours, or

b. a lack of sampler availability exceeding 3 days (72 hours) in a calendar month during which the associated exhauster has operated, or

c. a lack of sampler availability more than 18 days (432 hours) in a calendar year during which the associated exhauster has operated.

3) During sampler system outages, the facility shall safely cease waste disturbing activities of material upstream of the exhauster, and

a. Assure required abatement systems are operating within normal operating parameters (e.g., differential pressure, temperature, stack flow) to prevent inadvertent release of radioactive air emissions and the sampling and/or monitoring system shall be reestablished within the time limits cited in 1) above, or

b. Secure/Shutdown the emission unit and repair the sampling and/or monitoring system before restart of activities.

7.0 Interpretation of "Every 365 Days" for Office of River Protection Emission Units (WAC 246-247-040(5) and 060(5))

As required by this license as it applies solely to the Tank Farms emission units operated by the DOE Office of River Protection contractors and not to other contractors on the Hanford Site , "every 365 days" shall mean that the actions shall take
place in a timeframe of equal to or less than every 365 days with respect to the actions of record keeping, calibration, or testing to be completed as measured from the last date of record keeping, calibration, or testing unless otherwise more restrictive as specified by a standard or rule (e.g., annual report under subpart H). WDOH will, on a case-by-case basis review requests for alternative approvals and accept or reject these request based onthe individual case. ***(WAC 246-247-040(5) and 060(5))***

Enclosure 1 Emission Unit Specific License

Emission Unit Specific License List of Contents

Emission Unit 103
- NOC 1218

Emission Unit 104
- NOC 1233

Emission Unit 105
- NOC 1226

Emission Unit 106
- NOC 1231

Emission Unit 107
- NOC 1228

Emission Unit 108
- NOC 1229

Emission Unit 109
- NOC 1221

Emission Unit 110
- NOC 1227

Emission Unit 111
- NOC 1223

Emission Unit 112
- NOC 1222

Emission Unit 113
- NOC 1210

Emission Unit 114
- NOC 1200

Emission Unit 115
- NOC 1205

Emission Unit 116
- NOC 1198

Emission Unit 117
- NOC 1206

Emission Unit 118
- NOC 1197

Emission Unit 119
- NOC 1207

Emission Unit 120
- NOC 1196

Emission Unit 121
- NOC 1203

Emission Unit 122
- NOC 1209

Emission Unit 123
- NOC 1201

Emission Unit 124
- NOC 1195

Emission Unit 125
- NOC 1208

Emission Unit 126
- NOC 1199

Emission Unit 127
- NOC 1194

Emission Unit 128
- NOC 1202

Emission Unit 129
- NOC 1211

Emission Unit 130
- NOC 1204

Emission Unit 131
- NOC 1154

Emission Unit 132
- NOC 1151

Emission Unit 133
- NOC 1153

Emission Unit 134
- NOC 1152

Emission Unit 135
- NOC 1158

Emission Unit 136
- NOC 1159

Emission Unit 137
- NOC 1155

Emission Unit 138
- NOC 1160

Emission Unit 139
- NOC 1156

Emission Unit 140
- NOC 1157

Emission Unit 142
- NOC 1259

Emission Unit 146
- NOC 1081

Emission Unit 147
- NOC 1080

Emission Unit 148
- NOC 1079

Emission Unit 156
Emission Unit 163
Emission Unit 174
- NOC 826

Emission Unit 193
- NOC 1075

Emission Unit 200
- NOC 1177

Emission Unit 201
- NOC 1175

Emission Unit 202
- NOC 1161

Emission Unit 203
- NOC 1162

Emission Unit 205
Emission Unit 216
Emission Unit 217
Emission Unit 218
- NOC 972

Emission Unit 228
Emission Unit 230
- NOC 1141

Emission Unit 231
- NOC 1142

Emission Unit 232
- NOC 1146

Emission Unit 233
- NOC 1147

Emission Unit 235
- NOC 1150

Emission Unit 237
- NOC 1136

Emission Unit 242
- NOC 1149

Emission Unit 244
- NOC 1144

Emission Unit 245
- NOC 1143

Emission Unit 246
- NOC 1148

Emission Unit 247
- NOC 1135

Emission Unit 254
- NOC 1063

Emission Unit 255
- NOC 1114

Emission Unit 256
- NOC 1120

Emission Unit 257
- NOC 1113

Emission Unit 258
- NOC 1117

Emission Unit 259
- NOC 1111

Emission Unit 260
- NOC 1122

Emission Unit 261
- NOC 1116

Emission Unit 262
- NOC 1112

Emission Unit 263
- NOC 1119

Emission Unit 264
- NOC 1121

Emission Unit 265
- NOC 1118

Emission Unit 266
- NOC 1099

Emission Unit 267
- NOC 1107

Emission Unit 268
- NOC 1102

Emission Unit 269
- NOC 1095

Emission Unit 270
- NOC 1096

Emission Unit 271
- NOC 1110

Emission Unit 272
- NOC 1098

Emission Unit 273
- NOC 1115

Emission Unit 274
- NOC 1106

Emission Unit 275
- NOC 1101

Emission Unit 276
- NOC 1105

Emission Unit 277
- NOC 1103

Emission Unit 278
- NOC 1104

Emission Unit 279
- NOC 1097

Emission Unit 280
- NOC 1108

Emission Unit 281
- NOC 1100

Emission Unit 282
- NOC 1109

Emission Unit 283
- NOC 1123

Emission Unit 284
- NOC 1127

Emission Unit 285
- NOC 1128

Emission Unit 286
- NOC 1124

Emission Unit 287
- NOC 1134

Emission Unit 288
- NOC 1125

Emission Unit 289
- NOC 1126

Emission Unit 290
- NOC 1131

Emission Unit 291
- NOC 1130

Emission Unit 292
- NOC 1133

Emission Unit 293
- NOC 1132

Emission Unit 294
- NOC 1129

Emission Unit 301
- NOC 999

Emission Unit 302
- NOC 1094

Emission Unit 303
- NOC 1092

Emission Unit 304
- NOC 1093

Emission Unit 305
- NOC 1091

Emission Unit 308
Emission Unit 314
- NOC 1041

Emission Unit 315
- NOC 1033

Emission Unit 332
Emission Unit 337
Emission Unit 340
- NOC 981

Emission Unit 361
- NOC 1084

Emission Unit 369
Emission Unit 385
- NOC 973

Emission Unit 395
Emission Unit 396
- NOC 975

Emission Unit 397
- NOC 976

Emission Unit 398
- NOC 1032

Emission Unit 399
- NOC 974

Emission Unit 402
- NOC 1274

Emission Unit 412
- NOC 808

Emission Unit 435
- NOC 1272

Emission Unit 438
Emission Unit 439
- NOC 922

Emission Unit 443
- NOC 811

Emission Unit 447
- NOC 1074

Emission Unit 448
- NOC 641

Emission Unit 454
- NOC 650

Emission Unit 455
- NOC 1034

Emission Unit 461
- NOC 934

Emission Unit 472
- NOC 1020

Emission Unit 473
- NOC 1021

Emission Unit 476
- NOC 1072

Emission Unit 486
- NOC 1067

Emission Unit 498
- NOC 939

Emission Unit 689
Emission Unit 712
- NOC 1140

Emission Unit 713
- NOC 1249

Emission Unit 716
- NOC 1138

Emission Unit 717
- NOC 1139

Emission Unit 735

- NOC 1022

Emission Unit 736
- NOC 1025

Emission Unit 737
- NOC 1137

Emission Unit 738
- NOC 1246

Emission Unit 740
- NOC 1248

Emission Unit 742
- NOC 1251

Emission Unit 744
- NOC 1253

Emission Unit 749
- NOC 940

Emission Unit 751
- NOC 1239

Emission Unit 755
- NOC 1035

Emission Unit 756
- NOC 1036

Emission Unit 793
- NOC 962

Emission Unit 794
- NOC 963

Emission Unit 795
- NOC 964

Emission Unit 796
- NOC 965

Emission Unit 798
- NOC 960

Emission Unit 799
- NOC 961

Emission Unit 800
- NOC 966

Emission Unit 801
- NOC 967

Emission Unit 802
- NOC 968

Emission Unit 803
- NOC 969

Emission Unit 804
- NOC 970

Emission Unit 855
- NOC 1026

Emission Unit 856
- NOC 1027

Emission Unit 885
- NOC 941

Emission Unit 886
- NOC 942

Emission Unit 888
- NOC 696

Emission Unit 894
- NOC 1244

Emission Unit 909
- NOC 917

Emission Unit 910
- NOC 1240

Emission Unit 912
- NOC 1245

Emission Unit 922
- NOC 1247

Emission Unit 959
- NOC 1250

Emission Unit 969
- NOC 1252

Emission Unit 1128
- NOC 977

Emission Unit 1129
- NOC 1243

Emission Unit 1130
- NOC 1238

Emission Unit 1176
- NOC 978

Emission Unit 1181
- NOC 1038

Emission Unit 1183
- NOC 1076

Emission Unit 1185
- NOC 921

Emission Unit 1207
- NOC 1169

Emission Unit 1208
- NOC 1170

Emission Unit 1209
- NOC 1171

Emission Unit 1210
- NOC 1172

Emission Unit 1211
- NOC 1173

Emission Unit 1212
- NOC 1174

Emission Unit 1213

- NOC 1176

Emission Unit 1219
- NOC 1163

Emission Unit 1220
- NOC 1164

Emission Unit 1221
- NOC 1165

Emission Unit 1222
- NOC 1166

Emission Unit 1223
- NOC 1167

Emission Unit 1224
- NOC 1168

Emission Unit 1227
- NOC 1242

Emission Unit 1228
- NOC 1235

Emission Unit 1229
- NOC 1237

Emission Unit 1230
- NOC 1234

Emission Unit 1231
- NOC 1241

Emission Unit 1232
- NOC 1236

Emission Unit 1243
- NOC 1018

Emission Unit 1244
- NOC 1019

Emission Unit 1250
- NOC 749

Emission Unit 1289
- NOC 950

Emission Unit 1290
- NOC 956

Emission Unit 1291
- NOC 944

Emission Unit 1292
- NOC 983

Emission Unit 1293
- NOC 943

Emission Unit 1294
- NOC 933

Emission Unit 1322
- NOC 1037

Emission Unit 1326
- NOC 1039

Emission Unit 1327
- NOC 1040

Emission Unit 1328
- NOC 1028

Emission Unit 1329
- NOC 1029

Emission Unit 1333
- NOC 948

Emission Unit 1335
- NOC 1030

Emission Unit 1342
- NOC 1031

Emission Unit 1370
- NOC 906

Emission Unit 1371
- NOC 1254

Emission Unit 1384
- NOC 1255

Emission Unit 1406
- NOC 1256

Emission Unit 1413
- NOC 919

Emission Unit 1418
- NOC 945

Emission Unit 1420
- NOC 947

Emission Unit 1425
- NOC 1082

Emission Unit 1426
- NOC 1004

Emission Unit 1427
- NOC 1005

Emission Unit 1428
- NOC 1006

Emission Unit 1429
- NOC 1007

Emission Unit 1430
- NOC 1008

Emission Unit 1431
- NOC 1009

Emission Unit 1432
- NOC 1011

Emission Unit 1440
- NOC 1042

Emission Unit 1449
- NOC 1064

Emission Unit 1462

- NOC 1069

Emission Unit 1464

- NOC 1068

Emission Unit1465

- NOC 1073

Emission Unit 1471

- NOC 1262

Emission Unit 1472

- NOC 1263

Emission Unit 1473

- NOC 1264

Emission Unit 1474

- NOC 1265

Emission Unit 1475

- NOC 1266

Emission Unit 1476

- NOC 1267

Emission Unit 1477

- NOC 1268

Emission Unit 1478

- NOC 1269

E Emission Unit 1479

- NOC 1270

Emission Unit 1480

- NOC 1271

Emission Unit ID: 1

200E P-241C111-001

241-C-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 4.75 ft. 1.45 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-111 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1145

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 50

200 W-296P045-001

296-P-45

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 21.00 ft. 6.40 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 38.22 ft/second. 11.65 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	1	
	Heater	1	
	HEPA Filter Stages/Banks	2	In series, one filter per stage/bank
	Fan	1	500 cfm
	Demister	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, Pu-239, Total Alpha, Total Beta	Continuous

Sampling Requirements Record sample.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit, also known as POR06, is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization waste retrieval, decommissioning, deactivation, water intrusion mitigation, maintenance, and construction and operation support activities. The emission unit is a portable exhauster that operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-P-45 Operation - Water Intrusion Mitigation (Replaces NOC 936)	AIR 16-901	8/31/2016	1017

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.10E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

WATER INTRUSION MITIGATION
Water intrusion mitigation will include the operation of a 500 cfm portable exhauster connected to a riser in conjunction with an inlet HEPA filter to increase the evaporation rate of liquid in the tank. Equipment installed as part of the water intrusion mitigation process will include a HEPA-filtered exhauster, air inlet station, and ducting. The ducting will route the air flow from a tank riser to the exhauster. A small portion of water vapor is expected to condense in the ducting which will drip down inside the ducting, collect in a condensate reservoir, and

be gravity drained back to the tank via a seal pot. A downcomer may be installed in the exhaust riser to draw air from near the water surface. When the exhauster is not running, the inlet HEPA filter will serve as a tank barometric breather filter to provide abatement of particulate emissions from the tank.

Operation of the portable exhauster may also support tank farm operations, waste characterization, decommissioning, deactivation, maintenance, and construction and operation support activities.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137 1.02E+05 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239 9.33E+02 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90 2.80E+05 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH APPROVAL-Log Approval TWINS
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms. WAC 246-247-080(7)

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed using the release fraction for the tank inventory of 8.0 E-5. (WAC 246-247-040(5) and WAC 246-247-060(5)).

6) WDOH NOTIFICATION-Leak Testing Cannot be Performed
If new or altered section of ductwork cannot be tested due to tie-ins, WDOH will be notified. WAC 246-247-040(5) and WAC 246-247-060(5)

7) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137, Sr-90, and Pu-239 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI when a unit is deployed or redeployed. WAC 246-247-040(5) and WAC 246-247-110(8)

8) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels. WAC 246-247-040(5) and WAC 246-247-060(5)

9) ABATEMENT TECHNOLOGY-Tank Mitigation Limits
The 296-P-45 is limited to connecting to three tanks at one time. WAC-246-247-060(5)

10) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on ASME N510 and ASME N511, and shall have a minimum efficiency of 99.95%
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
•Relocating the ventilation system exhauster
WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)

11) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity cannot be directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained, based on psychometric charts and engineering calculations, so that the relative humidity remains below 70%. Daily monitoring is not required over weekends and holidays when no waste disturbing activities are occurring. WAC 246-247-040(5) and WAC 246-247-060(5)

12) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is also monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters. WAC 246-247-040(5)

13) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork above ground to the inlet of the exhauster filter housing, shall be insulated. WAC 246-247-040(5) and WAC 246-247-060(5)

14) ABATEMENT TECHNOLOGY-Ventilation System Exhauster Suspension from Active Service
The following will be implemented when a ventilation system exhauster that has been connected to a radioactive source is shut down and placed in suspension from active service. The following items will be completed 90 days after suspension from active service. Suspension from active service begins 365 days from when the permit required preventative maintenance tasks are suspended or from the last day of operation, whichever is sooner.
•Isolate (e.g., valve or blank off) the ventilation system exhauster unit from the source of radioactivity.
•Isolate (e.g., valve or blank off) the source of radioactivity (e.g., tank) or establish an alternative flow path through a registered emission point (e.g., passive filter or powered exhauster).
•Isolate the flow path downstream of the last stage of HEPA filtration by capping the stack or alternative location if the stack has been removed.
•Provide written notification to WDOH documenting completion of the above.
During suspension from active service, the monitoring and associated recordkeeping are not required to be conducted. In addition, the abatement and monitoring system testing (e.g., aerosol testing of the HEPA filters), maintenance, calibration, field checks, and the associated recordkeeping are not required to be conducted. WAC 246-247-040(5)) and (WAC 246-247-060(5)

15) ABATEMENT TECHNOLOGY-Ventilation System Exhauster Return to Active Service
The ventilation system exhauster will be evaluated for its ability to meet the regulatory requirements to operate prior to placing the exhauster back in service:
•Verify that parts removed during suspension from active service have been replaced-in-kind and the unit has been returned to full function.
•Conduct abatement and monitoring system inspections and field checks.
•Verify that the abatement and monitoring system testing, maintenance, and calibration have been completed.

(Note: some testing, maintenance, and calibration can only be completed when the exhauster is running.) The CAM and sampling system are to be operated during aerosol testing.
WDOH will be notified at least seven calendar days prior to conducting operational testing of the ventilation system exhauster. WAC 246-247-040(5) and WAC 246-247-060(5)

16) ABATEMENT TECHNOLOGY-Condensate Control
The condensate collection system shall be operated and maintained to ensure confinement of tank headspace contamination by preventing bypass of the HEPA filters through the condensate drain lines. This system should be operated and maintained to ensure confinement of tank headspace contamination and be protective of the HEPA filtration system by maintaining seal pot levels. WAC 246-247-060(5)

17) STANDARDS-ASME AG-1
Portable exhauster 296-P 45 was constructed consistent with the ASME AG-1-2003 code that was applicable at the time of construction. The requirements of the ASME AG-1-2012 code, as applicable, shall apply to the ductwork and demister.

18) STANDARDS-Startup Leak Testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement in kind of components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration. WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)

19) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field Check Requirements. WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)

20) CONTAMINATION CONTROL-Monthly Radiological Survey
While the exhauster is operating, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading. WAC 246-247-040(5) and WAC 246-247-060(5)

Emission Unit ID: 53

200W P-296P022-001

296-P-22

This is a MINOR, ACTIVELY ventilated emission unit.

241-SY TANK FARM

Emission Unit Information

Stack Height: 13.17 ft. 4.01 m. Stack Diameter 0.69 ft. 0.21 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 33.04 ft/second. 10.07 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	2	2 in series
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a DST annulus exhauster used to support tank farm operations and ventilates the annuli of DSTs 241-SY Tank Farm. The tanks store radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The annulus is the space between the inner wall and outer wall of the tank, and is used for leak detection. The emission unit operates continuously.

Emission Unit ID: 56

200W P-296SY-001

296-P-23

This is a MINOR, ACTIVELY ventilated emission unit.

241-SY TANK FARM

Emission Unit Information

Stack Height: 17.30 ft. 5.27 m. Stack Diameter 0.51 ft. 0.16 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 83.07 ft/second. 25.32 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	
	Heater	Non-Operational	
	Prefilter	1	
	HEPA	2	In series
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year.

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit (241-SY B Train - western most unit) is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-SY Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the applicable regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit is operated in alternation with the "A" train (296-S-25) when "B" train is not operational. The emission unit operates intermittently.

Emission Unit ID: 57

200 W-296P043-001

296-P-43

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 21.00 ft. 6.40 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 38.22 ft/second. 11.65 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	1	
	Heater	1	
	HEPA Filter Stages/Banks	2	In series, one filter per stage/bank
	Fan	1	500 cfm
	Demister	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, Am-241, Pu-239/240, Total Alpha, Total Beta	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit, also known as POR04, is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. When used it operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-P-43 Operation - Phase II Waste Retrieval and Closure (Replaces NOC 825)	AIR 15-803	7/29/2015	937

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from tanks at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped to a receiver tank, staging tank, storage double shell tank (DST), or other staging/storage vessel associated with the supplemental treatment, packaging, or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUICING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving DST, recirculated supernatant/water, chemical agent, or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities. The vacuum waste retrieval system is introduced into the tanks by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel, or a staging single shell tank (SST), storage DST, or other staging/storage vessels associated with supplemental treatment, packaging, or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the tanks. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B, and 241-T Tank Farms, a vacuum retrieval process tank, staging tank, staging SST, storage DST, or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the tank being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some tanks. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with

the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST, or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste. The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non leaker tanks, and 2) a vacuum retrieval option is intended for retrieval of assumed leaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.
.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 241 2.30E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Am - 243 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ba - 137 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	C - 14 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cd - 113 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Cm - 242 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 244 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Co - 60 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 134 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 137 2.10E+06 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE
Eu - 152 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 154 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
H - 3 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	I - 129 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Nb - 93 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ni - 59 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ni - 63 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Np - 237 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pa - 231 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 5.30E+03 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE
Pu - 240 1.20E+02 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Pu - 241 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ra - 226 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ra - 228 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ru - 106 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sb - 125 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Se - 79 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sm - 151 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sn - 126 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sr - 90 5.50E+06 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Tc - 99 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Th - 229 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Th - 232 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 232 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 90

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 93

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

4) RELEASE RATES-WDOH Log Approval
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms (WAC 246-247-080(7)).

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed (tank inventory and supernate) using the release fraction for the tank inventory of 1.0 E-3 for tank inventory and 8.0 E-5 for supernate (WAC 246-247-040(5) and WAC 246-247-060(5)).

6) WDOH ALTERNATE APPROVAL-Non Destructive Analysis Method
A pre-operational Non Destructive Analysis (NDA) of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the in-service date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Standards
General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations. (WAC 246-247-040(5) and WAC 246-247-060(5)).

8) WDOH NOTIFICATION-Leak Testing Cannot be Performed
If new or altered section of ductwork cannot be tested due to tie-ins, WDOH will be notified (WAC 246-247-040(5) and WAC 246-247-060(5)).

9) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137, Sr-90, Pu-239/240, and Am-241 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI when a unit is deployed or redeployed (WAC 246-247-040(5) and WAC 246-247-110(8)).

10) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels (WAC 246-247-040(5) and WAC 246-247-060(5)).

11) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Contitions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single shell tank due to structural concerns. The justification for structural concerns with the single shell tank shall be documented and provided to WDOH upon request. (WAC 246-247-040(5) and WAC 246-247-060(5))

12) WDOH NOTIFICATIONS-High Reading on Weekly Smear Surveys
Monitoring of breather filters during retrieval activities shall consist of weekly smear surveys on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent. Levels above 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha shall be reported to WDOH. (WAC

246-247-040(5) and WAC 246-247-060(5))

13) STANDARDS-Startup Leak Testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

14) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field check requirements (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

15) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on ASME N510 and ASME N511, and shall have a minimum efficiency of 99.95% (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
•Relocating the ventilation system exhauster

16) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity cannot be directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained, based on psychometric charts and engineering calculations, so that the relative humidity remains below 70%. Daily Monitoring is not required over weekends and holidays when no waste disturbing activities are occurring (WAC 246-247-040(5) and WAC 246-247-060(5)).

17) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is also monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters (WAC 246-247-040(5)).

18) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing, shall be insulated (WAC 246-247-040(5) and WAC 246-247-060(5)).

19) ABATEMENT TECHNOLOGY- Ventilation System Exhauster Suspension from Active Service
The following will be implemented when a ventilation system exhauster that has been connected to a radioactive source is shut down and placed in suspension from active service. The following items will be completed 90 days after suspension from active service. Suspension from active service begins when the permit required preventative maintenance tasks are suspended or 365 days from the last day of operation, whichever is sooner.
•Isolate (e.g., valve or blank off) the ventilation system exhauster unit from the source of radioactivity.
•Isolate (e.g., valve or blank off) the source of radioactivity (e.g., tank) or establish an alternative flow path through a registered emission point (e.g., passive filter or powered exhauster).
•Isolate the flow path downstream of the last stage of HEPA filtration by capping the stack or alternative location if the stack has been removed.
•Provide written notification to WDOH documenting completion of the above.
During suspension from active service, the monitoring and associated recordkeeping are not required to be conducted. In addition, the abatement and monitoring system testing (e.g., aerosol testing of the HEPA filters), maintenance, calibration, field checks, and the associated recordkeeping are not required to be conducted (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

20) ABATEMENT TECHNOLOGY-Ventilation System Exhauster Return to Active Service
The ventilation system exhauster will be evaluated for its ability to meet the regulatory requirements to operate prior to placing the exhauster back in service:
•Verify that parts removed during suspension from active service have been replaced-in-kind and the unit has been returned to full function.
•Conduct abatement and monitoring system inspections and field checks.
•Verify that the abatement and monitoring system testing, maintenance, and calibration have been completed.
(Note: some testing, maintenance, and calibration can only be completed when the exhauster is running.) The CAM and sampling system are to be operated during aerosol testing.

WDOH will be notified at least seven calendar days prior to conducting operational testing of the ventilation system exhauster (WAC 246-247-040(5) and WAC 246-247-060(5)).

21) CONTAMINATION CONTROL-Max Operating Pressure
During waste retrieval operations, the maximum pressure for any waste retrieval method shall not exceed 37,000 psig (WAC 246-247-040(5) and WAC 246-247-060(5)).

22) CONTAMINATION CONTROL-Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading (WAC 246-247-040(5) and WAC 246-247-060(5)).

23) CONTAMINATION CONTROL-Exhauster Alternate Usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank (WAC 246-247-040(5) and WAC 246-247-060(5)).

24) CONTAMINATION CONTROL-Active ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 58

200 W-296P044-001

296-P-44

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 21.00 ft. 6.40 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 38.22 ft/second. 11.65 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	1	
	Heater	1	
	HEPA filter Stages/Banks	2	In series, one filter per stage/bank
	Fan	1	500 cfm
	Demister	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, Am-241, Pu-239/240, Total Alpha, Total Beta	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit, also known as POR05, is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. When used it operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-P-44 Operation - Phase II Waste Retrieval and Closure (Replaces NOC 825)	AIR 15-804	7/29/2015	938

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from tanks at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped to a receiver tank, staging tank, storage double shell tank (DST), or other staging/storage vessel associated with the supplemental treatment, packaging, or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUICING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving DST, recirculated supernatant/water, chemical agent, or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities. The vacuum waste retrieval system is introduced into the tanks by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel, or a staging single shell tank (SST), storage DST, or other staging/storage vessels associated with supplemental treatment, packaging, or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the tanks. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B, and 241-T Tank Farms, a vacuum retrieval process tank, staging tank, staging SST, storage DST, or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the tank being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some tanks. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with

the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST, or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste. The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non leaker tanks, and 2) a vacuum retrieval option is intended for retrieval of assumed leaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.
.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 241 2.30E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Am - 243 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ba - 137 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	C - 14 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cd - 113 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Cm - 242 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 244 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Co - 60 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 134 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 137 2.10E+06 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE
Eu - 152 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 154 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
H - 3 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	I - 129 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Nb - 93 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ni - 59 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ni - 63 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Np - 237 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pa - 231 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 5.30E+03 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE
Pu - 240 1.20E+02 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Pu - 241 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ra - 226 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ra - 228 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ru - 106 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sb - 125 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Se - 79 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sm - 151 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sn - 126 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sr - 90 5.50E+06 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Tc - 99 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Th - 229 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Th - 232 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 232 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 90

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 93

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

4) RELEASE RATES-WDOH Log Approval
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms (WAC 246-247-080(7)).

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed (tank inventory and supernate) using the release fraction for the tank inventory of 1.0 E-3 for tank inventory and 8.0 E-5 for supernate (WAC 246-247-040(5) and WAC 246-247-060(5)).

6) WDOH ALTERNATE APPROVAL-Non Destructive Analysis Method
A pre-operational Non Destructive Analysis (NDA) of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the in-service date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Standards
General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations. (WAC 246-247-040(5) and WAC 246-247-060(5)).

8) WDOH NOTIFICATION-Leak Testing Cannot be Performed
If new or altered section of ductwork cannot be tested due to tie-ins, WDOH will be notified (WAC 246-247-040(5) and WAC 246-247-060(5)).

9) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137, Sr-90, Pu-239/240, and Am-241 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI when a unit is deployed or redeployed (WAC 246-247-040(5) and WAC 246-247-110(8)).

10) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels (WAC 246-247-040(5) and WAC 246-247-060(5)).

11) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Contitions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single shell tank due to structural concerns. The justification for structural concerns with the single shell tank shall be documented and provided to WDOH upon request. (WAC 246-247-040(5) and WAC 246-247-060(5))

12) WDOH NOTIFICATIONS-High Reading on Weekly Smear Surveys
Monitoring of breather filters during retrieval activities shall consist of weekly smear surveys on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent. Levels above 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha shall be reported to WDOH. (WAC

246-247-040(5) and WAC 246-247-060(5))

13) STANDARDS-Startup Leak Testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

14) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field check requirements (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

15) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on ASME N510 and ASME N511, and shall have a minimum efficiency of 99.95% (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
•Relocating the ventilation system exhauster

16) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity cannot be directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained, based on psychometric charts and engineering calculations, so that the relative humidity remains below 70%. Daily Monitoring is not required over weekends and holidays when no waste disturbing activities are occurring (WAC 246-247-040(5) and WAC 246-247-060(5)).

17) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is also monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters (WAC 246-247-040(5)).

18) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing, shall be insulated (WAC 246-247-040(5) and WAC 246-247-060(5)).

19) ABATEMENT TECHNOLOGY- Ventilation System Exhauster Suspension from Active Service
The following will be implemented when a ventilation system exhauster that has been connected to a radioactive source is shut down and placed in suspension from active service. The following items will be completed 90 days after suspension from active service. Suspension from active service begins when the permit required preventative maintenance tasks are suspended or 365 days from the last day of operation, whichever is sooner.
•Isolate (e.g., valve or blank off) the ventilation system exhauster unit from the source of radioactivity.
•Isolate (e.g., valve or blank off) the source of radioactivity (e.g., tank) or establish an alternative flow path through a registered emission point (e.g., passive filter or powered exhauster).
•Isolate the flow path downstream of the last stage of HEPA filtration by capping the stack or alternative location if the stack has been removed.
•Provide written notification to WDOH documenting completion of the above.
During suspension from active service, the monitoring and associated recordkeeping are not required to be conducted. In addition, the abatement and monitoring system testing (e.g., aerosol testing of the HEPA filters), maintenance, calibration, field checks, and the associated recordkeeping are not required to be conducted (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

20) ABATEMENT TECHNOLOGY-Ventilation System Exhauster Return to Active Service
The ventilation system exhauster will be evaluated for its ability to meet the regulatory requirements to operate prior to placing the exhauster back in service:
•Verify that parts removed during suspension from active service have been replaced-in-kind and the unit has been returned to full function.
•Conduct abatement and monitoring system inspections and field checks.
•Verify that the abatement and monitoring system testing, maintenance, and calibration have been completed.
(Note: some testing, maintenance, and calibration can only be completed when the exhauster is running.) The CAM and sampling system are to be operated during aerosol testing.

WDOH will be notified at least seven calendar days prior to conducting operational testing of the ventilation system exhauster (WAC 246-247-040(5) and WAC 246-247-060(5)).

21) CONTAMINATION CONTROL-Max Operating Pressure
During waste retrieval operations, the maximum pressure for any waste retrieval method shall not exceed 37,000 psig (WAC 246-247-040(5) and WAC 246-247-060(5)).

22) CONTAMINATION CONTROL-Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading (WAC 246-247-040(5) and WAC 246-247-060(5)).

23) CONTAMINATION CONTROL-Exhauster Alternate Usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank (WAC 246-247-040(5) and WAC 246-247-060(5)).

24) CONTAMINATION CONTROL-Active ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 59

200W S-296S025-001

296-S-25

This is a MINOR, ACTIVELY ventilated emission unit.

241-SY TANK FARM

Emission Unit Information

Stack Height: 19.08 ft. 5.82 m. Stack Diameter 0.67 ft. 0.20 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 47.27 ft/second. 14.41 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	
	Heater	1	Heater runs intermittently due to temperature Regulation
	Prefilter	1	
	HEPA	2	In series
	Fan	1	Emission unit operates intermittently

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit (241-sy a Train - eastern most unit) is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-SY Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the applicable regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit is operated in alternation with the "B" train (296-P-23) when "A" train is not operational. The emission unit operates intermittently.

Emission Unit ID: 65

200W P-241T105-001

241-T-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 2.71 ft. 0.83 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-105 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1182

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 66

200W P-241T106-001

241-T-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 4.96 ft. 1.51 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-106 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1183

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 67

200W P-241T109-001

241-T-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 1.83 ft. 0.56 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-109 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1186

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 68

200W P-241T102-001

241-T-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 3.54 ft. 1.08 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-102 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1179

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 69

200W P-241T107-001

241-T-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 4.00 ft. 1.22 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-107 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1184

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 70

200W P-241T111-001

241-T-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 4.46 ft. 1.36 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-111 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1188

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 71

200W P-241T104-001

241-T-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 2.50 ft. 0.76 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-104 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1181

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 72

200W P-241T112-001

241-T-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 2.96 ft. 0.90 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-112 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1189

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 73

200W P-241T108-001

241-T-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 2.71 ft. 0.83 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-108 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1185

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 74

200W P-241T203-001

241-T-203

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 3.92 ft. 1.19 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-203 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1192

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 75

200W P-241T204-001

241-T-204

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 4.00 ft. 1.22 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-204 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1193

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 76

200W P-241T110-001

241-T-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 3.67 ft. 1.12 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-110 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1187

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 77

200W P-241T202-001

241-T-202

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 4.08 ft. 1.24 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-202 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1191

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 78

200W P-241T103-001

241-T-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 3.04 ft. 0.93 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-103 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1180

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 79

200W P-241T101-001

241-T-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 3.79 ft. 1.16 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-101 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1178

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 80

200W P-241T201-001

241-T-201

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 3.42 ft. 1.04 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-T-201 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1190

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 81

200W P-241TY106-001

241-TY-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-TY TANK FARM

Emission Unit Information

Stack Height: 2.79 ft. 0.85 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TY-106 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1217

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 82

200W P-241TY102-001

241-TY-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-TY TANK FARM

Emission Unit Information

Stack Height: 4.92 ft. 1.50 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TY-102 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1213

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 83

200W P-241TY105-001

241-TY-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-TY TANK FARM

Emission Unit Information

Stack Height: 2.83 ft. 0.86 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TY-105 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1216

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 84

200W P-241TY104-001

241-TY-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-TY TANK FARM

Emission Unit Information

Stack Height: 3.25 ft. 0.99 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TY-104 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1215

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 85

200W P-241TY103-001

241-TY-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-TY TANK FARM

Emission Unit Information

Stack Height: 4.00 ft. 1.22 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TY-103 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1214

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 86

200W P-241TY101-001

241-TY-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-TY TANK FARM

Emission Unit Information

Stack Height: 3.17 ft. 0.97 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TY-101 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1212

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 87

200E P-241A103-001

241-A-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-A TANK FARM

Emission Unit Information

Stack Height: 4.13 ft. 1.26 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-A-103 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1087

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 88

200E P-241A104-001

241-A-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-A TANK FARM

Emission Unit Information

Stack Height: 3.50 ft. 1.07 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-A-104 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1088

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 90

200E P-241A102-001

241-A-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-A TANK FARM

Emission Unit Information

Stack Height: 4.08 ft. 1.24 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-A-102 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1086

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 91

200E P-241A105-001

241-A-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-A TANK FARM

Emission Unit Information

Stack Height: 2.21 ft. 0.67 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-A-105 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1089

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 92

200E P-241A101-001

241-A-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-A TANK FARM

Emission Unit Information

Stack Height: 3.58 ft. 1.09 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-A-101 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1085

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 93

200E P-296A042-001

296-A-42

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AY/AZ TANK FARM

Emission Unit Information

Stack Height: 55.00 ft. 16.76 m. Stack Diameter 0.83 ft. 0.25 m.

Average Stack Effluent Temperature: 75 degrees Fahrenheit. 24 degrees Celsius.

Average Stack ExhaustVelocity: 30.56 ft/second. 9.31 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Condenser	1	(In the common exhaust train) At common header. Downtime to be reported by the Tank Farm air emissions notification procedure.
	Water Chiller	1	(In the common exhaust train) Downtime to be reported by the Tank Farm air emissions notification procedure.
	HEME	1	(In the common exhaust train) Downtime to be reported by the Tank Farm air emissions notification procedure.
	Heater	1	(In the common exhaust train) 2 parallel flow paths with 1 operational. Downtime to be reported by the Tank Farm air emissions notification procedure.
	HEPA Filter Stages/Bank	2	(In the common exhaust train) 2 parallel flow paths. 1 filter per stage/ bank, Downtime to be reported by the Tank Farm air emissions notification procedure.
	Chiller Pump	1	(In the common exhaust train) Downtime to be reported by the Tank Farm air emissions notification procedure.
	Fan	1	(In the common exhaust train) 2 parallel flow paths. 1000 CFM Downtime to be reported by the Tank Farm air emissions notification procedure.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, Am-241	Continuous

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241 AY/AZ Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a primary exhauster ventilation system that operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-A-42 Exhauster Operation (Replaces NOC 901)	AIR 15-822	8/19/2015	971

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.42E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 4.83E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The authorized activities of this NOC are to install, remove, and operate waste management systems (e.g., mixer pumps, transfer pumps, sluicing, and other required equipment) in tanks 241-AZ-101, 241-AZ-102, 241-AY-101, and 241-AY-102 for the receipt and transfer of waste. Emissions from these tanks are ventilated through exhauster 296-A-42. Based on operational needs, a tank may be isolated from the common header to facilitate installation of a portable exhauster which would be authorized under a separate license.

The 241-AY-101, 241-AY-102, 241-AZ-101, and 241-AZ-102 tanks are double shell tanks (DST). The inner shell is constructed from heat treated, stress-relieved steel. The outer shell is constructed of non-stress relieved steel. The two shells are separated by a 2.5 ft. annulus and contained inside a concrete shell.

The 241-AY and 241-AZ tanks are part of a Resource Conservation and Recovery Act treatment, storage, and/or disposal unit. The tanks contain mixed waste in the form of liquids or contained solids (suspended or settled). The contents in each of the four tanks may be mixed periodically to control gas entrapment in the settled solids, to control temperature, for chemical treatment to control corrosion, or for waste retrieval. Contained solids will be mobilized, as required, as part of this process by hydraulic action of the mixer pumps, sluicers, or by use of air-lift circulators in each of the tanks. During such activities, as well as during storage, the ventilation system maintains the vapor space in each tank below atmospheric pressure.

PRIMARY EXHAUSTER

The air flows from the tanks to a common header. The common header is the point in the overall system at which ventilation flow is provided to the abatement control system. Also, a portion of each tank's exhaust can be recirculated to assist in moisture control.

The recirculation system is not part of the primary abatement control system and the use is optional. The recirculation fan can be removed and replaced with a spool piece, to allow recirculation system's condenser and moisture separator to reduce the loading of the overall system moisture removal equipment.

The tank farm exhaust system provides ventilation for all 241-AZ and 241-AY tank primary vapor spaces. The system removes heat, water vapor, and particulates, and maintains a negative pressure on the tanks. The existing ventilation and abatement control systems for the 241- AY/AZ Tank Farm will be used during the transfer of waste to and from the 241-AY and 241-AZ tanks, unless supplemental ventilation is available. Based on operational needs, a tank may be isolated from the common header to facilitate installation of a portable exhauster which would be authorized under a separate license.

Inlet air for the 241-AZ and 241-AY tanks is provided through the inlet air filters. Air is exhausted from each tank independently through exhaust ducts. The discharge to atmosphere will flow through a condenser, high-efficiency mist eliminator, heater, and two stages of HEPA filters in series. For purposes of calculating abated emissions, only the HEPA filter control efficiencies are used.

The abatement control system consists of two filtration trains and a single stack. Each train consists of a heater, two stages of HEPA filters in series and fan that can ventilate all the tanks. Only one train operates at a time.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped to a receiver tank, staging tank, storage DST, or other staging/storage vessel associated with the supplemental treatment, packaging, or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying water, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUICING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving DST, recirculated supernatant/water, chemical agent, or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities. The vacuum waste retrieval system is introduced into the tanks by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel, or a staging single shell tank (SST), storage DST, or other staging/storage vessels associated with supplemental treatment, packaging, or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the tanks. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B, and 241-T Tank Farms, a vacuum retrieval process tank, staging tank, staging SST, storage DST, or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the tank being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some tanks. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST, or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste. The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non leaker tanks, and 2) a vacuum retrieval option is intended for retrieval of assumed leaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low

volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 241 8.20E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated PTE.	Am - 243 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ba - 137 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	C - 14 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cd - 113 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Cm - 242 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 244 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Co - 60 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 134 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 137 1.10E+07 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated PTE.
Eu - 152 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 154 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
H - 3 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	I - 129 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Nb - 93 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ni - 59 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ni - 63 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Np - 237 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pa - 231 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pu - 240 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 241 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ra - 226 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ra - 228 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ru - 106 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sb - 125 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Se - 79 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sm - 151 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sn - 126		

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sr - 90 1.80E+07 Contributes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated PTE.	Tc - 99 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Th - 229 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Th - 232 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 232 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
U - 233 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 234 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 235 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
U - 236 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Y - 90 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Zr - 93 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

4) RELEASE RATES-WDOH Log Approval
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms (WAC 246-247-080(7)).

5) WDOH ALTERNATE APPROVAL- Release Fractions
The PTE calculation shall be based on the inventory of material to be managed (tank inventory and supernate) using the release fraction for the tank inventory of 1.0 E-3 for tank inventory and 8.0 E-5 for supernate.

6) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137, Sr-90, and Am-241 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI (WAC 246-247-040(5) and WAC 246-247-110(8)).

7) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels (WAC 246-247-040(5) and WAC 246-247-060(5)).

8) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1969 and the applicable stack monitoring system inspection requirements referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field check requirements (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

9) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on ASME N510 and ASME N511, and shall have a minimum efficiency of 99.95%. In addition, HEPA filter replacement requires in-place leak testing of the HEPA filters (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

10) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity cannot be directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained, based on psychometric charts and engineering calculations, so that the relative humidity remains below 70%. Daily Monitoring is not required over weekends and holidays when no waste disturbing activities are occurring (WAC 246-247-040(5) and WAC 246-247-060(5)).

11) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is also monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters (WAC 246-247-040(5)).

12) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork that is above ground and not in a temperature controlled building, from the exit of the tank to the inlet of the exhauster filter housing shall be insulated (WAC 246-247-040(5) and WAC 246-247-060(5)).

13) CONTAMINATION CONTROL-Max Operating Pressure
During waste retrieval operations, the maximum pressure for any waste retrieval method shall not exceed 37,000 psig (WAC 246-247-040(5) and WAC 246-247-060(5)).

14) CONTAMINATION CONTROL-Active Ventilation
Tanks shall have active ventilation during waste retrieval operation, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval (WAC 246-247-040(5) and WAC 246-247-060(5)).

Emission Unit ID: 94

200E P-241A106-001

241-A-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-A TANK FARM

Emission Unit Information

Stack Height: 3.08 ft. 0.94 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-A-106 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1090

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 96

200E P-204AR-001

296-A-26

This is a MINOR, ACTIVELY ventilated emission unit.

204 AR Building

Emission Unit Information

Stack Height: 27.00 ft. 8.23 m. Stack Diameter 1.17 ft. 0.36 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 25.50 ft/second. 7.77 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	2	1 filter is located on the line directly to the catch tank. 2nd filter is on the shared/main line for the facility and catch tank
	Fan	1	
	Deentrainer	2	1 located just upstream of each HEPA filter
	Heater	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year (if operated other than for HEPA filter testing).

Sampling Requirements Record Sample (if operated other than for HEPA filter testing)

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a building/facility exhauster that is used to ventilate building and facility operations such as but not limited to process vessels, contaminated rooms, catch tank, abandoned facilities awaiting decommissioning, and vaults that support tank farm operations, maintenance, and surveillance activities for tank farms. The exhauster can be used to support current surveillance, maintenance activities, operations or decommissioning, decontamination, and cleanup activities within the building/facility. Many of the activities other than normal surveillance, maintenance, and operation support will be or are regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a building/facility exhauster ventilation system that currently inactive. The building is currently not used for operational activities: exhauster is operated for purpose of annual aerosol testing of HEPA filters.

Emission Unit ID: 97

200W P-241U103-001

241-U-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 14.00 ft. 4.27 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-103 SST G-1 Breather Filter Operation	AIR 17-710	7/27/2017	1220

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) ABATEMENT TECHNOLOGY-G-1 HEPA Annual Leak Testing
The G-1 HEPA filters are in-place leak tested annually and will have a minimum leak test efficiency of 99.95%. G-1 filters will be replaced when aerosol testing performance criteria are not met.

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 98

200W P-241U108-001

241-U-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 15.75 ft. 4.80 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-108 SST G-1 Breather Filter Operation	AIR 17-710	7/27/2017	1225

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) ABATEMENT TECHNOLOGY-G-1 HEPA Annual Leak Testing
The G-1 HEPA filters are in-place leak tested annually and will have a minimum leak test efficiency of 99.95%. G-1 filters will be replaced when aerosol testing performance criteria are not met.

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 99

200W P-241U107-001

241-U-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 5.25 ft. 1.60 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-107 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1224

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 100

200W P-241U203-001

241-U-203

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 3.42 ft. 1.04 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-203 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1232

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 101

200W P-241U102-001

241-U-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 15.75 ft. 4.80 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-102 SST G-1 Breather Filter Operation	AIR 17-710	7/27/2017	1219

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) ABATEMENT TECHNOLOGY-G-1 HEPA Annual Leak Testing
The G-1 HEPA filters are in-place leak tested annually and will have a minimum leak test efficiency of 99.95%. G-1 filters will be replaced when aerosol testing performance criteria are not met.

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 102

200W P-241U201-001

241-U-201

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 3.75 ft. 1.14 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-201 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1230

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 103

200W P-241U101-001

241-U-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 4.08 ft. 1.24 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-101 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1218

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 104

200W P-241U204-001

241-U-204

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 3.83 ft. 1.17 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-204 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1233

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 105

200W P-241U109-001

241-U-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 3.79 ft. 1.16 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-109 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1226

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 106

200W P-241U202-001

241-U-202

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 3.46 ft. 1.05 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-202 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1231

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 107

200W P-241U111-001

241-U-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 4.00 ft. 1.22 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-111 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1228

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 108

200W P-241U112-001

241-U-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 18.50 ft. 5.64 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-112 SST G-1 Breather Filter Operation	AIR 17-710	7/27/2017	1229

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) ABATEMENT TECHNOLOGY-G-1 HEPA Annual Leak Testing
The G-1 HEPA filters are in-place leak tested annually and will have a minimum leak test efficiency of 99.95%. G-1 filters will be replaced when aerosol testing performance criteria are not met.

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 109

200W P-241U104-001

241-U-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 3.67 ft. 1.12 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-104 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1221

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 110

200W P-241U110-001

241-U-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 2.83 ft. 0.86 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-110 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1227

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 111

200W P-241U106-001

241-U-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 18.00 ft. 5.49 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-106 SST G-1 Breather Filter Operation	AIR 17-710	7/27/2017	1223

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) ABATEMENT TECHNOLOGY-G-1 HEPA Annual Leak Testing
The G-1 HEPA filters are in-place leak tested annually and will have a minimum leak test efficiency of 99.95%. G-1 filters will be replaced when aerosol testing performance criteria are not met.

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 112

200W P-241U105-001

241-U-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 19.00 ft. 5.79 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-105 SST G-1 Breather Filter Operation	AIR 17-710	7/27/2017	1222

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) ABATEMENT TECHNOLOGY-G-1 HEPA Annual Leak Testing
The G-1 HEPA filters are in-place leak tested annually and will have a minimum leak test efficiency of 99.95%. G-1 filters will be replaced when aerosol testing performance criteria are not met.

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 113

200W P-241TX117-001

241-TX-117

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 2.29 ft. 0.70 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-117 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1210

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 114

200W P-241TX107-001

241-TX-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 3.67 ft. 1.12 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-107 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1200

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 115

200W P-241TX112-001

241-TX-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 3.58 ft. 1.09 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-112 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1205

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 116

200W P-241TX105-001

241-TX-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 4.67 ft. 1.42 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-105 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1198

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 117

200W P-241TX113-001

241-TX-113

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 1.83 ft. 0.56 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-113 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1206

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 118

200W P-241TX104-001

241-TX-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 4.88 ft. 1.49 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-104 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1197

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 119

200W P-241TX114-001

241-TX-114

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 2.83 ft. 0.86 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-114 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1207

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 120

200W P-241TX103-001

241-TX-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 4.54 ft. 1.38 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-103 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1196

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 121

200W P-241TX110-001

241-TX-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 1.88 ft. 0.57 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-110 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1203

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 122

200W P-241TX116-001

241-TX-116

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 2.25 ft. 0.69 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-116 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1209

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 123

200W P-241TX108-001

241-TX-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 2.25 ft. 0.69 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-108 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1201

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 124

200W P-241TX102-001

241-TX-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 1.92 ft. 0.59 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-102 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1195

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 125

200W P-241TX115-001

241-TX-115

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 3.29 ft. 1.00 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-115 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1208

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 126

200W P-241TX106-001

241-TX-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 1.58 ft. 0.48 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-106 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1199

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 127

200W P-241TX101-001

241-TX-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 2.25 ft. 0.69 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-101 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1194

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 128

200W P-241TX109-001

241-TX-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 1.83 ft. 0.56 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-109 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1202

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 129

200W P-241TX118-001

241-TX-118

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 1.92 ft. 0.59 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-118 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1211

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 130

200W P-241TX111-001

241-TX-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.21 ft. 1.59 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-TX-111 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1204

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 131

200W P-241S104-001

241-S-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 3.50 ft. 1.07 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-S-104 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1154

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 132

200W P-241S101-001

241-S-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 3.83 ft. 1.17 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-S-101 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1151

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 133

200W P-241S103-001

241-S-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 4.00 ft. 1.22 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-S-103 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1153

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 134

200W P-241S102-001

241-S-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-S-102 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1152

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.40E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 135

200W P-241S108-001

241-S-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 4.46 ft. 1.36 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-S-108 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1158

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 136

200W P-241S109-001

241-S-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 2.75 ft. 0.84 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-S-109 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1159

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 137

200W P-241S105-001

241-S-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 2.33 ft. 0.71 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-S-105 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1155

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 138

200W P-241S110-001

241-S-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 4.58 ft. 1.40 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-S-110 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1160

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 139

200W P-241S106-001

241-S-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 4.00 ft. 1.22 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-S-106 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1156

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 140

200W P-241S107-001

241-S-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 3.25 ft. 0.99 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-S-107 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1157

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 142

200E P-242A-002

296-A-22

This is a MINOR, ACTIVELY ventilated emission unit.

242-A Evaporator

Emission Unit Information

Stack Height: 111.45 ft. 33.97 m. Stack Diameter 0.48 ft. 0.15 m.

Average Stack Effluent Temperature: 120 degrees Fahrenheit. 49 degrees Celsius.

Average Stack ExhaustVelocity: 48.00 ft/second. 14.63 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Heater	1	
	HEPA	2	In series
	Fan	1	Fan operates during 242-A processing.
	Prefilter	1	
	Deentrainer	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	During campaigns: 40 CFR 60, Appendix A, Method 2; 40 CFR 61, Appendix B, Method 114: During non-campaigns: 40 CFR 61, Appendix B, Method 114(3).	Campaign: TOTAL ALPHA, TOTAL BETA, 137Cs, 90Sr, 239Pu, 238Pu, and 241Am. Non-Campaign: Total Alpha, Total Beta.	One week sample per quarter, and continuous sampling during campaign.

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a Vessel Vent exhauster that is used to ventilate the process equipment including the evaporator vessel, C-100 tank and associated piping. The emission unit is a building/facility exhauster ventilation system that operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-A-22 Operation, 242-A Evaporator (Replaces NOC 824)	AIR 17-601	5/30/2017	1259

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.00E-07 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.00E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 242-A Evaporator facility is used to reduce the volume of waste solutions that do not self-boil, and thus reduce the number of underground double-shell tanks required for waste storage. The 242-A Evaporator employs

a conventional forced-circulation, vacuum evaporation system to concentrate radioactive waste solutions. Principal process components of the evaporator system are located in the 242-A Building. They include the reboiler, vapor-liquid separator, recirculation pump and pipe loop, slurry product pump, condensers, and vessel ventilation system.

The evaporator system receives a mixed blend feed from the feed tank. The feed consists of unprocessed and processed waste and recycled liquid that are removed from storage tanks after solids have settled. The feed is pumped into the recirculation line and blended with the main product slurry stream, which flows to the reboiler via the recirculation pump. The mixture is heated in the reboiler. The vapor liquid separator is maintained at a reduced pressure. Under this reduced pressure, a fraction of the water in the heated slurry flashes to steam and is drawn through two wire mesh deentrainer pads into a vapor line that leads to the primary condenser. As evaporation takes place in the separator vessel, the slurry becomes concentrated. When the process solution has been concentrated to the parameters specified by the campaigns process memo, a fraction is withdrawn from the upper recirculation line, upstream of the feed addition point, and is either gravity drained or pumped by the slurry pump to underground storage tanks.

Vapors removed from the vapor-liquid separator via the vapor line are condensed and routed to the condensate collection tank. The process condensate is discharged to the Liquid Effluent Retention Facility (LERF). Steam condensate is continuously monitored for excessive radiation, pH, and conductivity, and then discharged from the building to the 200 Area Treated Effluent Disposal Facility (TEDF). Upon detection of radioactive contamination, the radiation monitor will automatically divert the steam condensate stream to the feed tank. Cooling water from the condensers, which is also continuously monitored for excessive radiation, pH, and conductivity, is also discharged to the 200 Area TEDF. This used cooling water stream cannot be diverted, thus, if contamination is detected, an evaporator shutdown is required. Non-condensable vapors from the evaporator are filtered and discharged to the atmosphere via the vessel vent system. This system consists of a deentrainment pad, prefilter, heater, high-efficiency filter assembly, and vessel vent exhauster.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	3.50E+04	C - 14	1.80E+05	Cm - 244	4.50E+02
Co - 60	4.20E+04	Cs - 134	5.20E+05	Cs - 137	5.20E+07
Eu - 154	1.70E+05	Eu - 155	2.40E+05	I - 129	9.10E+01
Nb - 94	3.40E+03	Pu - 238	4.50E+01	Pu - 239/240	5.60E+03
Pu - 241	5.20E+05	Ra - 226	1.10E+03	Ru - 106	1.80E+06
Se - 79	2.70E+03	Sr - 90	7.70E+06	Tc - 99	7.00E+04

Emission Unit ID: 146

200E P-242AL44-001

LERF Basin #44

This is a MINOR, PASSIVELY ventilated emission unit.

Liquid Effluent Retention Facility (LERF)

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 0.17 ft. 0.05 m.

Average Stack Effluent Temperature: 77 degrees Fahrenheit. 25 degrees Celsius.

Average Stack ExhaustVelocity: 32.50 ft/second. 9.91 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Charcoal filter	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	Air - every 2 weeks continuous/deposition - annually

Sampling Requirements Per the sitewide ambient air monitoring program and section 5.0 of the FF-01 license, samples will be collected from the existing near-facility and far-field monitoring stations.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at LERF involve receipt and storage of wastewaters at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Liquid Effluent Retention Facility 200 Area Basin 44 (Replaces NOC 998)	AIR 17-133	1/24/2017	1081

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.96E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The operation of the Liquid Effluent Retention Facility 200 Area (LERF) Basin 44
LERF provides temporary storage, as well as flow and pH equalization, for wastewaters prior to treatment at the Effluent Treatment Facility (ETF). LERF consists of three high density polyethylene double lined basins, each with an operating capacity of 29.5 million L. Each basin has a leachate collection system located between the primary and secondary composite liner systems and is also equipped with a floating low density polyethylene cover firmly attached to the sidewalls to prevent unwanted material from entering the basins and avoid evaporation of wastewater. To prevent the buildup of gas, each basin is passively vented through vent pipes. Gases exiting through a vent pipe are channeled through a carbon adsorption filter.

LERF Cover Cleanup Operations
These operations include removal of contaminated liquids, vegetation, debris, and windblown dirt/mud that have collected on the surface of the LERF basin covers and in nearby external locations in or near LERF. Precipitation and windblown dirt/mud, which normally collect on the floating low-density polyethylene

covers, are removed by pumping the precipitation into the basin under the cover, into containers located at LERF, or directly to the ground if contamination is below the groundwater quality criteria for radionuclides listed in WAC 173-200-040, "Water Quality Standards for Groundwaters of the State of Washington," "Criteria." The dirt/mud on the covers is collected on filters, sluiced, slurried, or mechanically loaded into containers for disposal.

Vegetation and debris (such as old hoses and failed pumps) are removed using mechanical methods and tools including, but not limited to, cranes, heavy equipment, chain balls, nets, long reach tools, or similar methods. Workers will employ these methods from the sides of the basins. This material will be placed in containers and disposed.

The floating covers and charcoal filters on breather vents reduce emissions from the LERF basins. Other unfiltered LERF/ETF diffuse and fugitive emissions are very low. Containment provided by drums and other waste packages, combined with minimization of any external contamination in accordance with established radiation control procedures, provides for effective control of potential fugitive emissions. Potential emissions during waste unloading from tankers and pressure testing of tankers are controlled by the very moist conditions in the tanker and the gradual air displacement and air release rates that occur.

LERF Cover Repair and Replacement
Basin covers may be repaired or replaced as needed.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.96E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	5.01E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate is assumed to be Pu-239/240. The release rate assumes two full basins and the addition of waste water equivalent to ETF's annual operating capacity. In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

Am - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

B/G - 0	3.33E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate is assumed to be Sr-90/Cs-137. The release rate assumes two full basins and the addition of waste water equivalent to ETF's annual operating capacity. In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

C - 14		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 144		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 244		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 154		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 155		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

H - 3	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 129	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
K - 40	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mn - 54	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Na - 22	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 94	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Np - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Pu - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Pu - 239/240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.		
Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ra - 226	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.		
Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Ce - 144	Cm - 244	Co - 60
Cs - 134	Cs - 137	Eu - 154	Eu - 155	H - 3
I - 129	K - 40	Mn - 54	Na - 22	Nb - 94
Np - 237	Pu - 238	Pu - 239/240	Pu - 241	Ra - 226
Ru - 106	Sb - 125	Se - 79	Sr - 90	Tc - 99
U - 233	U - 234	U - 235	U - 236	U - 238
Zn - 65	Zr - 95			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) CONTAMINATION CONTROLS - Quarterly Inspection
Contamination on top of the LERF covers shall be minimized by inspecting the covers on a quarterly basis for damage and accumulation of precipitation, and pumping the precipitation into the basin under the covers as needed. Weather allowing, pumping will be initiated whenever visible channeling occurs (unless caused by malfunction of the tensioning system) or whenever there is standing water on more than 10% of the cover.
(WAC 246-247-040(5))

5) CONTAMINATION CONTROLS - Annual Cleaning
Covers shall be cleaned at a minimum of once per calendar year of accumulation of precipitation and removable material. The fluid will be removed to a level where the fluid is not readily pumpable, and the accumulated solids will be removed to a level the does not cause channeling of the cover.
(WAC 246-247-040(5))

6) CONTAMINATION CONTROL - Cover Cleanup
If physical removal from the covers other than by pumping is necessary, the following controls shall be implemented:
•Continuous radiological control technician coverage shall be provided as specified in applicable Radiological Work Permits.
•Beta-gamma contamination surveys shall be performed during cleanup activities.
•Cleanup activities involving movement of dispersible contaminated material will stop if average wind speeds exceed 20 miles per hour, as measured at the work site.
•Suppressants such as water, fixatives, and covers will be used, as necessary, to control contamination spread.
(WAC 246-247-040(5))

7) CONTAMINATION DOCUMENTATION - Cover Cleanup Control-Outside LERF Basins
For the area from the basin edges to 1,000 ft. from the basin edge, maintain a record of radiological control reports that were performed during a month (routine, pre-job, and during-job surveys) and appropriate corrective actions taken (as required) which shall be available for the audit. The reports shall include details of biologic vectors if involved.

(WAC 246-247-040(5), WAC 246-247-040(6))

8) WDOH NOTIFICATION - Cover Cleanup Control-Contamination Greater than 1 rad/hr
WDOH shall be notified when direct contamination readings are detected greater than 1 rad per hour per 100 square centimeters beta-gamma during cleanup activities.
(WAC 246-247-040(5), WAC 246-247-040(6))

9) WDOH NOTIFICATION - Cover Cleanup Control-Increased Controls
Removable and transferable contamination shall be maintained less than 4 rad per hour per 100 square centimeters beta-gamma. Exceeding these contamination levels requires notification to WDOH and implementation of the following additional controls:
•Soil will be wetted prior to removal if not already damp.
•General work place air monitoring will be performed during removal activities.
•Dislodged vegetation not already in containers will have fixative applied at the end of each shift, or the material will be covered, as necessary, to prevent airborne contamination.
(WAC 246-247-040(5), WAC 246-247-040(6))

10) CONTAMINATION CONTROL - Diffuse and Fugitive Activities
The 200 Area Diffuse/Fugitive Emission Unit at LERF/ETF is limited to the following:
•LERF wastewater receipt via pipeline and LERF access ports
•Minor leaks during transfers when using vented pipelines
•LERF operations and maintenance
•LERF leachate collection system sampling and sump pumping
•Load-in station wastewater receipts via container
•Load-in station filter skid operation and maintenance
•Load-in station tank operation, maintenance, and repair
•Minor leaks and spills to secondary containment systems
•Storage and transfer of treated effluent containing tritium
•Effluent sampling
•Purge water open-top settling tank operation
•Removal of contaminated liquids, plants, debris, and dirt/mud that have collected on the surface of the LERF covers and in nearby external locations in or near LERF
•Cover repair and replacement
(WAC 246-247-040(5))

11) DIFFUSE AND FUGITIVE OPERATIONS AUTHORIZED
This NOC is authorized to incorporate the most current version of EU 1425 Diffuse and Fugitive Operations at LERF and ETF.
(WAC 246-247-040(5))

12) CONTINUOUS MONITORING - Ambient Air Monitoring Network
The 200 Area near-facility ambient air monitoring network shall be used for continuous monitoring. Stations N498, N499, N582, N972, and N999 will provide indication of potential elevated airborne radioactivity.
(WAC 246-247-040(5))

13) WDOH NOTIFICATION - Equipment Repair
Tensioning system malfunctions that cause channeling shall be repaired within a six month time frame or WDOH will be notified of a time frame for repair.
(WAC 246-247-040(5))

14) MONITORING REQUIREMENTS - Sampling Frequency-Soil Deposition
Annual soil deposition sampling shall be performed in three prominent downwind locations, as determined by the previous year’s wind rose data.
(WAC 246-247-040(5))

Emission Unit ID: 147

200E P-242AL43-001

LERF Basin #43

This is a MINOR, PASSIVELY ventilated emission unit.

Liquid Effluent Retention Facility (LERF)

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 0.17 ft. 0.05 m.

Average Stack Effluent Temperature: 77 degrees Fahrenheit. 25 degrees Celsius.

Average Stack ExhaustVelocity: 32.50 ft/second. 9.91 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Charcoal filter	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	Air - every 2 weeks continuous/deposition - annually

Sampling Requirements Per the sitewide ambient air monitoring program and section 5.0 of the FF-01 license, samples will be collected from the existing near-facility and far-field monitoring stations.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at LERF involve receipt and storage of wastewaters at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Liquid Effluent Retention Facility 200 Area Basin 43 (Replaces NOC 997)	AIR 17-132	1/24/2017	1080

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.96E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The operation of the Liquid Effluent Retention Facility 200 Area (LERF) Basin 43
LERF provides temporary storage, as well as flow and pH equalization, for wastewaters prior to treatment at the Effluent Treatment Facility (ETF). LERF consists of three high density polyethylene double lined basins, each with an operating capacity of 29.5 million L. Each basin has a leachate collection system located between the primary and secondary composite liner systems and is also equipped with a floating low density polyethylene cover firmly attached to the sidewalls to prevent unwanted material from entering the basins and avoid evaporation of wastewater. To prevent the buildup of gas, each basin is passively vented through vent pipes. Gases exiting through a vent pipe are channeled through a carbon adsorption filter.

LERF Cover Cleanup Operations
These operations include removal of contaminated liquids, vegetation, debris, and windblown dirt/mud that have collected on the surface of the LERF basin covers and in nearby external locations in or near LERF. Precipitation and windblown dirt/mud, which normally collect on the floating low-density polyethylene

covers, are removed by pumping the precipitation into the basin under the cover, into containers located at LERF, or directly to the ground if contamination is below the groundwater quality criteria for radionuclides listed in WAC 173-200-040, "Water Quality Standards for Groundwaters of the State of Washington," "Criteria." The dirt/mud on the covers is collected on filters, sluiced, slurried, or mechanically loaded into containers for disposal.

Vegetation and debris (such as old hoses and failed pumps) are removed using mechanical methods and tools including, but not limited to, cranes, heavy equipment, chain balls, nets, long reach tools, or similar methods. Workers will employ these methods from the sides of the basins. This material will be placed in containers and disposed.

The floating covers and charcoal filters on breather vents reduce emissions from the LERF basins. Other unfiltered LERF/ETF diffuse and fugitive emissions are very low. Containment provided by drums and other waste packages, combined with minimization of any external contamination in accordance with established radiation control procedures, provides for effective control of potential fugitive emissions. Potential emissions during waste unloading from tankers and pressure testing of tankers are controlled by the very moist conditions in the tanker and the gradual air displacement and air release rates that occur.

LERF Cover Repair and Replacement
Basin covers may be repaired or replaced as needed.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.96E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	5.01E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate is assumed to be Pu-239/240. The release rate assumes two full basins and the addition of waste water equivalent to ETF's annual operating capacity. In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

Am - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

B/G - 0	3.33E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate is assumed to be Sr-90/Cs-137. The release rate assumes two full basins and the addition of waste water equivalent to ETF's annual operating capacity. In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

C - 14		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 144		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 244		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 154		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 155		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

H - 3	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 129	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
K - 40	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mn - 54	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Na - 22	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 94	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Np - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Pu - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Pu - 239/240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.		
Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ra - 226	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.		
Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Ce - 144	Cm - 244	Co - 60
Cs - 134	Cs - 137	Eu - 154	Eu - 155	H - 3
I - 129	K - 40	Mn - 54	Na - 22	Nb - 94
Np - 237	Pu - 238	Pu - 239/240	Pu - 241	Ra - 226
Ru - 106	Sb - 125	Se - 79	Sr - 90	Tc - 99
U - 233	U - 234	U - 235	U - 236	U - 238
Zn - 65	Zr - 95			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) CONTAMINATION CONTROLS - Quarterly Inspection
Contamination on top of the LERF covers shall be minimized by inspecting the covers on a quarterly basis for damage and accumulation of precipitation, and pumping the precipitation into the basin under the covers as needed. Weather allowing, pumping will be initiated whenever visible channeling occurs (unless caused by malfunction of the tensioning system) or whenever there is standing water on more than 10% of the cover.
(WAC 246-247-040(5))

5) CONTAMINATION CONTROLS - Annual Cleaning
Covers shall be cleaned at a minimum of once per calendar year of accumulation of precipitation and removable material. The fluid will be removed to a level where the fluid is not readily pumpable, and the accumulated solids will be removed to a level the does not cause channeling of the cover.
(WAC 246-247-040(5))

6) CONTAMINATION CONTROL - Cover Cleanup
If physical removal from the covers other than by pumping is necessary, the following controls shall be implemented:
•Continuous radiological control technician coverage shall be provided as specified in applicable Radiological Work Permits.
•Beta-gamma contamination surveys shall be performed during cleanup activities.
•Cleanup activities involving movement of dispersible contaminated material will stop if average wind speeds exceed 20 miles per hour, as measured at the work site.
•Suppressants such as water, fixatives, and covers will be used, as necessary, to control contamination spread.
(WAC 246-247-040(5))

7) CONTAMINATION DOCUMENTATION - Cover Cleanup Control-Outside LERF Basins
For the area from the basin edges to 1,000 ft. from the basin edge, maintain a record of radiological control reports that were performed during a month (routine, pre-job, and during-job surveys) and appropriate corrective actions taken (as required) which shall be available for the audit. The reports shall include details of biologic vectors if involved.

(WAC 246-247-040(5), WAC 246-247-040(6))

8) WDOH NOTIFICATION - Cover Cleanup Control-Contamination Greater than 1 rad/hr
WDOH shall be notified when direct contamination readings are detected greater than 1 rad per hour per 100 square centimeters beta-gamma during cleanup activities.
(WAC 246-247-040(5), WAC 246-247-040(6))

9) WDOH NOTIFICATION - Cover Cleanup Control-Increased Controls
Removable and transferable contamination shall be maintained less than 4 rad per hour per 100 square centimeters beta-gamma. Exceeding these contamination levels requires notification to WDOH and implementation of the following additional controls:
•Soil will be wetted prior to removal if not already damp.
•General work place air monitoring will be performed during removal activities.
•Dislodged vegetation not already in containers will have fixative applied at the end of each shift, or the material will be covered, as necessary, to prevent airborne contamination.
(WAC 246-247-040(5), WAC 246-247-040(6))

10) CONTAMINATION CONTROL - Diffuse and Fugitive Activities
The 200 Area Diffuse/Fugitive Emission Unit at LERF/ETF is limited to the following:
•LERF wastewater receipt via pipeline and LERF access ports
•Minor leaks during transfers when using vented pipelines
•LERF operations and maintenance
•LERF leachate collection system sampling and sump pumping
•Load-in station wastewater receipts via container
•Load-in station filter skid operation and maintenance
•Load-in station tank operation, maintenance, and repair
•Minor leaks and spills to secondary containment systems
•Storage and transfer of treated effluent containing tritium
•Effluent sampling
•Purge water open-top settling tank operation
•Removal of contaminated liquids, plants, debris, and dirt/mud that have collected on the surface of the LERF covers and in nearby external locations in or near LERF
•Cover repair and replacement
(WAC 246-247-040(5))

11) DIFFUSE AND FUGITIVE OPERATIONS AUTHORIZED
This NOC is authorized to incorporate the most current version of EU 1425 Diffuse and Fugitive Operations at LERF and ETF.
(WAC 246-247-040(5))

12) CONTINUOUS MONITORING - Ambient Air Monitoring Network
The 200 Area near-facility ambient air monitoring network shall be used for continuous monitoring. Stations N498, N499, N582, N972, and N999 will provide indication of potential elevated airborne radioactivity.
(WAC 246-247-040(5))

13) WDOH NOTIFICATION - Equipment Repair
Tensioning system malfunctions that cause channeling shall be repaired within a six month time frame or WDOH will be notified of a time frame for repair.
(WAC 246-247-040(5))

14) MONITORING REQUIREMENTS - Sampling Frequency-Soil Deposition
Annual soil deposition sampling shall be performed in three prominent downwind locations, as determined by the previous year’s wind rose data.
(WAC 246-247-040(5))

Emission Unit ID: 148

200E P-242AL42-001

LERF Basin #42

This is a MINOR, PASSIVELY ventilated emission unit.

Liquid Effluent Retention Facility (LERF)

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 0.17 ft. 0.05 m.

Average Stack Effluent Temperature: 77 degrees Fahrenheit. 25 degrees Celsius.

Average Stack ExhaustVelocity: 32.50 ft/second. 9.91 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Charcoal filter	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	Air - every 2 weeks continuous/deposition - annually

Sampling Requirements Per the sitewide ambient air monitoring program and section 5.0 of the FF-01 license, samples will be collected from the existing near-facility and far-field monitoring stations.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at LERF involve receipt and storage of wastewaters at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Liquid Effluent Retention Facility 200 Area Basin 42 (Replaces NOC 996)	AIR 17-131	1/24/2017	1079

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.96E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The operation of the Liquid Effluent Retention Facility 200 Area (LERF) Basin 42

LERF provides temporary storage, as well as flow and pH equalization, for wastewaters prior to treatment at the Effluent Treatment Facility (ETF). LERF consists of three high density polyethylene double lined basins, each with an operating capacity of 29.5 million L. Each basin has a leachate collection system located between the primary and secondary composite liner systems and is also equipped with a floating low density polyethylene cover firmly attached to the sidewalls to prevent unwanted material from entering the basins and avoid evaporation of wastewater. To prevent the buildup of gas, each basin is passively vented through vent pipes. Gases exiting through a vent pipe are channeled through a carbon adsorption filter.

LERF Cover Cleanup Operations
These operations include removal of contaminated liquids, vegetation, debris, and windblown dirt/mud that have collected on the surface of the LERF basin covers and in nearby external locations in or near LERF.

Precipitation and windblown dirt/mud, which normally collect on the floating low-density polyethylene covers, are removed by pumping the precipitation into the basin under the cover, into containers located at LERF, or directly to the ground if contamination is below the groundwater quality criteria for radionuclides listed in WAC 173-200-040, "Water Quality Standards for Groundwaters of the State of Washington," "Criteria." The dirt/mud on the covers is collected on filters, sluiced, slurried, or mechanically loaded into containers for disposal.

Vegetation and debris (such as old hoses and failed pumps) are removed using mechanical methods and tools including, but not limited to, cranes, heavy equipment, chain balls, nets, long reach tools, or similar methods. Workers will employ these methods from the sides of the basins. This material will be placed in containers and disposed.

The floating covers and charcoal filters on breather vents reduce emissions from the LERF basins. Other unfiltered LERF/ETF diffuse and fugitive emissions are very low. Containment provided by drums and other waste packages, combined with minimization of any external contamination in accordance with established radiation control procedures, provides for effective control of potential fugitive emissions. Potential emissions during waste unloading from tankers and pressure testing of tankers are controlled by the very moist conditions in the tanker and the gradual air displacement and air release rates that occur.

LERF Cover Repair and Replacement
Basin covers may be repaired or replaced as needed.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.96E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	5.01E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate is assumed to be Pu-239/240. The release rate assumes two full basins and the addition of waste water equivalent to ETF's annual operating capacity. In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

Am - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

B/G - 0	3.33E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate is assumed to be Sr-90/Cs-137. The release rate assumes two full basins and the addition of waste water equivalent to ETF's annual operating capacity. In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

C - 14	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 244	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 154	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 155	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

H - 3	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 129	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

K - 40	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 54	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 22	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 94	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 239/240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.

Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.

Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Ce - 144	Cm - 244	Co - 60
Cs - 134	Cs - 137	Eu - 154	Eu - 155	H - 3
I - 129	K - 40	Mn - 54	Na - 22	Nb - 94
Np - 237	Pu - 238	Pu - 239/240	Pu - 241	Ra - 226
Ru - 106	Sb - 125	Se - 79	Sr - 90	Tc - 99
U - 233	U - 234	U - 235	U - 236	U - 238
Zn - 65	Zr - 95			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) CONTAMINATION CONTROLS - Quarterly Inspection
Contamination on top of the LERF covers shall be minimized by inspecting the covers on a quarterly basis for damage and accumulation of precipitation, and pumping the precipitation into the basin under the covers as needed. Weather allowing, pumping will be initiated whenever visible channeling occurs (unless caused by malfunction of the tensioning system) or whenever there is standing water on more than 10% of the cover.
(WAC 246-247-040(5))

5) CONTAMINATION CONTROLS - Annual Cleaning
Covers shall be cleaned at a minimum of once per calendar year of accumulation of precipitation and removable material. The fluid will be removed to a level where the fluid is not readily pumpable, and the accumulated solids will be removed to a level the does not cause channeling of the cover.
(WAC 246-247-040(5))

6) CONTAMINATION CONTROL - Cover Cleanup
If physical removal from the covers other than by pumping is necessary, the following controls shall be implemented:
•Continuous radiological control technician coverage shall be provided as specified in applicable Radiological Work Permits.
•Beta-gamma contamination surveys shall be performed during cleanup activities.
•Cleanup activities involving movement of dispersible contaminated material will stop if average wind speeds exceed 20 miles per hour, as measured at the work site.
•Suppressants such as water, fixatives, and covers will be used, as necessary, to control contamination spread.
(WAC 246-247-040(5))

7) CONTAMINATION DOCUMENTATION - Cover Cleanup Control-Outside LERF Basins
For the area from the basin edges to 1,000 ft. from the basin edge, maintain a record of radiological control reports

that were performed during a month (routine, pre-job, and during-job surveys) and appropriate corrective actions taken (as required) which shall be available for the audit. The reports shall include details of biologic vectors if involved.
(WAC 246-247-040(5), WAC 246-247-040(6))

8) WDOH NOTIFICATION - Cover Cleanup Control-Contamination Greater than 1 rad/hr
WDOH shall be notified when direct contamination readings are detected greater than 1 rad per hour per 100 square centimeters beta-gamma during cleanup activities.
(WAC 246-247-040(5), WAC 246-247-040(6))

9) WDOH NOTIFICATION - Cover Cleanup Control-Increased Controls
Removable and transferable contamination shall be maintained less than 4 rad per hour per 100 square centimeters beta-gamma. Exceeding these contamination levels requires notification to WDOH and implementation of the following additional controls:
•Soil will be wetted prior to removal if not already damp.
•General work place air monitoring will be performed during removal activities.
•Dislodged vegetation not already in containers will have fixative applied at the end of each shift, or the material will be covered, as necessary, to prevent airborne contamination.
(WAC 246-247-040(5), WAC 246-247-040(6))

10) CONTAMINATION CONTROL - Diffuse and Fugitive Activities
The 200 Area Diffuse/Fugitive Emission Unit at LERF/ETF is limited to the following:
•LERF wastewater receipt via pipeline and LERF access ports
•Minor leaks during transfers when using vented pipelines
•LERF operations and maintenance
•LERF leachate collection system sampling and sump pumping
•Load-in station wastewater receipts via container
•Load-in station filter skid operation and maintenance
•Load-in station tank operation, maintenance, and repair
•Minor leaks and spills to secondary containment systems
•Storage and transfer of treated effluent containing tritium
•Effluent sampling
•Purge water open-top settling tank operation
•Removal of contaminated liquids, plants, debris, and dirt/mud that have collected on the surface of the LERF covers and in nearby external locations in or near LERF
•Cover repair and replacement
(WAC 246-247-040(5))

11) DIFFUSE AND FUGITIVE OPERATIONS AUTHORIZED
This NOC is authorized to incorporate the most current version of EU 1425 Diffuse and Fugitive Operations at LERF and ETF.
(WAC 246-247-040(5))

12) CONTINUOUS MONITORING - Ambient Air Monitoring Network
The 200 Area near-facility ambient air monitoring network shall be used for continuous monitoring. Stations N498, N499, N582, N972, and N999 will provide indication of potential elevated airborne radioactivity.
(WAC 246-247-040(5))

13) WDOH NOTIFICATION - Equipment Repair
Tensioning system malfunctions that cause channeling shall be repaired within a six month time frame or WDOH will be notified of a time frame for repair.
(WAC 246-247-040(5))

14) MONITORING REQUIREMENTS - Sampling Frequency-Soil Deposition
Annual soil deposition sampling shall be performed in three prominent downwind locations, as determined by the previous year’s wind rose data.
(WAC 246-247-040(5))

Emission Unit ID: 156

200E P-296A028-001

296-A-28

This is a MINOR, ACTIVELY ventilated emission unit.

241-AW TANK FARM

Emission Unit Information

Stack Height: 23.50 ft. 7.16 m. Stack Diameter 2.00 ft. 0.61 m.

Average Stack Effluent Temperature: 120 degrees Fahrenheit. 49 degrees Celsius.

Average Stack ExhaustVelocity: 31.34 ft/second. 9.55 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	2	2 filter in series for each train, trains may be operated independently or together
	Fan	1	1 for each train, trains may be operated independently or together
	Deentrainer	1	1 for each train
	Heater	1	1 for each train

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a DST annulus exhauster used to support tank farm operations and ventilates the annuli of DSTs 241-AW Tank Farm. The tanks store radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The annulus is the space between the inner wall and outer wall of the tank, and is used for leak detection. The emission unit operates intermittently.

Emission Unit ID: 163

200W P-242S-001

296-S-18

This is a MINOR, ACTIVELY ventilated emission unit.

242-S Evaporator

Emission Unit Information

Stack Height: 22.00 ft. 6.71 m. Stack Diameter 3.50 ft. 1.07 m.

Average Stack Effluent Temperature: 117 degrees Fahrenheit. 47 degrees Celsius.

Average Stack ExhaustVelocity: 5.80 ft/second. 1.77 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	2	2 in parallel with 2 in series (1 fan abandoned in place, only one flow path is available for operations)
	Fan	1	2 parallel flow paths (1 fan abandoned in place, only one flow path is available for operations)

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a building/facility exhauster that is used to ventilate building and facility operations such as but not limited to process vessels, contaminated rooms, cells, glove boxes, hoods, abandoned facilities awaiting decommissioning, and vaults that support tank farm operations, maintenance, and surveillance activities for tank farms. The exhauster can be used to support current surveillance, maintenance activities, operations or decommissioning, decontamination, and cleanup activities within the building/facility. Many of the activities other than normal surveillance, maintenance, and operation support will be or are regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a building/facility exhauster ventilation system that operates intermittently.

Emission Unit ID: 174

200E P-296A020-001

296-A-20

This is a MINOR, ACTIVELY ventilated emission unit.

241-AZ TANK FARM

Emission Unit Information

Stack Height: 15.70 ft. 4.79 m. Stack Diameter 2.00 ft. 0.61 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 10.61 ft/second. 3.23 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	4	2 HEPA's in series for each train, 2 trains
	Fan	1	
	Radial Damper	1	Set to allow only 2,000 CFM (1,000 CFM per annulus)
	Heater	2	1 per train, 2 trains

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075[3]	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a DST annulus exhauster used to support tank farm operations by ventilating the annuli of DSTs 241-AZ-101 and 241-AZ-102. Each train of this emission unit supports an individual tank (Train A for 241-AZ-101 and Train B for 241-AZ-102). The tank stores radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The annulus is the space between the inner wall and outer wall of the tank, and is used for leak detection. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-AZ Tank Farm Annulus Exhauster Operation (Replaces NOC 671)	AIR 12-308	2/23/2012	826

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.00E-07 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.00E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Exhausting the annulus of the 241-AZ-101 and 241-AZ-102 double-shell tanks (DSTs). The inner shell is constructed from heat-treated, stress-relieved steel. The outer shell is constructed of non-stress-relieved steel. The two shells are separated by a 2.5 foot annulus and are contained inside a concrete shell. The tanks have a usable waste volume of approximately 1,000,000 gallons each. The 296-A-20 stack exhauster ventilates the annular space of both 241-AZ-101and 241-AZ-102. The 241-AZ annulus exhaust fan draws outside air into a common

inlet filter assembly. The inlet filter assembly shall consists of two filter stages, a pre-filter bank, and an inlet filter. The air will pass through a distribution manifold and flow control valves into the annular space of both the 241-AZ-101 and 241-AZ-102 tanks, via underground ductwork. The flow control butterfly dampers can be adjusted to distribute air between the sides of the annuli and the air slots below the primary tanks. Exhaust air shall be drawn out of each annulus through underground ducting to individual aboveground exhaust HEPA filter banks (one for each tank), associated heaters, and isolation dampers. To allow for balancing flow between annuli or to allow isolation of an individual exhaust HEPA filter bank, dampers shall be installed upstream of each exhaust HEPA filter bank.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	7.00E-05	Beta - 0	2.99E-02

4) Flow rate through the HEPA filters shall not exceed the manufactures rating of those HEPA filters.

Emission Unit ID: 193

200W P-296W004 001

296-W-4

This is a MAJOR, ACTIVELY ventilated emission unit.

Waste Receiving and Processing Facility (WRAP)

Emission Unit Information

Stack Height: 47.00 ft. 14.33 m. Stack Diameter 2.63 ft. 0.80 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: 44.30 ft/second. 13.50 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
1	HEPA	2	Redundant systems in parallel consisting of two banks each
2	HEPA	2	Redundant systems in parallel consisting of two banks each
	Prefilter	1	Prefilter for each HEPA housing
	Fan	2	2 parallel paths (1-in use, 1 in backup)

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 60 Appendix A, Method 2; 40 CFR 61, Appendix B, Method 114; 61.93(b)(2)(ii) ANSI N13.1	Each radionuclide that could contribute greater than 10% of the potential TEDE	Continuous, Collect samples biweekly at a minimum

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at the WRAP Facility involve storage, treatment, and disposal of waste containers at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of Waste Receiving and Processing Facility (Replaces NOC 810)	AIR 17-119	1/16/2017	1075

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.42E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The mission of the WRAP facility includes examining, assaying, characterizing, treating, verifying, and repackaging solid radioactive waste material and mixed radioactive waste to enable treatment, storage, or disposal. The WRAP facility manages many categories of radioactive materials such as low-level waste (LLW), transuranic (TRU) waste, TRU mixed waste, and low-level mixed waste (LLMW) in contact-handled (CH) containers where the external surface dose rate does not exceed 200 mrem/hr. CH containers are defined as packages having surface dose rates of less than 200 mrem/hr. Remote–handled (RH) containers (i.e., containers where the external surface dose rate is equal to or greater than 200 mrem/hr) also are processed and stored at WRAP in accordance with the approved safety analysis.

Building 2336-W at the WRAP consists of the following areas:
•Shipping and receiving area

•Nondestructive examination/nondestructive assay (NDE/NDA) area
•Process area
•Ancillary support areas, including the heating, ventilation, and air conditioning (HVAC), electrical room, mechanical room, and administration areas

See the following emission units for a detailed description of additional controls/conditions and limits under:
EU 193 296-W-4; Waste Receiving and Processing Facility
EU 486 200 Area Diffuse/Fugitive; Waste Receiving and Processing Facility
EU 1183 HSGS Analysis Facility

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.02E+02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

DE - 0	1.80E+04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

DE-Ci is a method of normalizing the exposure risk of the Various isotopes, where the DE-Ci are represented as PU-239.

4) PROCESS DESCRIPTION - General Overview of WRAP Operations

This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Numerous activities within the WRAP complex, which now includes the 2404-WA, 2404-WB, and 2404 WC buildings, have been and will be conducted as routine activities. TRU and mixed wastes are received and processed at WRAP. The 2404-WA and 2404-WB buildings are used for waste container storage activities. The 2404-WC buildings are used for storage as well as for conducting some head space gas sampling (HSGS) utilizing a darting process.

WRAP also has support buildings to perform NDE and NDA of larger waste containers.
These units include:

MO-610 - MOBILE BOX ASSAY UNIT(SuperHENC)

MO-610 is a mobile box assay unit used to determine the AEA-regulated material content of a waste container. The mobile trailer is approximately 3.0 m (10 ft) by 12.2 m (40 ft) and is used to assay containers smaller than 2 m3 in volume.

2406-W Facility - HIGH ENERGY REAL-TIME RADIOGRAPHY (HERTR)

The HERTR unit is a mobile unit used to perform NDE of containers smaller than 2 m3 (71 ft3). The HERTR unit consists of two components: (1) a shielded vault where containers are examined, and (2) an operator control area. The vault is a shielded enclosure of modular concrete construction. The operator control area is a mobile trailer that is located in close proximity to the unit. The NDE is used to examine dense waste items to indicate the physical appearance of the waste, identify if liquids are present, and/or other identified suspect nonconformance waste forms are present to support waste characterization and processing, confirmation, treatment, and/or certification.

THE FOLLOWING SECTIONS BRIEFLY DISCUSS THE GENERAL OPERATIONAL ACTIVITIES CONDUCTED AT WRAP:

PACKAGING AND REPACKAGING WASTE

Packaging and repackaging activities are performed for waste generated at WRAP as well as for onsite and offsite generators. The repackaging of waste supports waste acceptance criteria for other TSD facilities. For example: prohibited items from waste packages (i.e., waste items that do not meet acceptance criteria) are removed and either staged for later handling or repackaged using remote or manual methods, and must have a void space of less than 10%. To meet the less than 10% requirement, void filler can be added. Packaging and repackaging activities can include the following:
• Adding absorbent

• Aerosol can/drum puncturing
• Compositing/aggregating solids or liquids
• Over packing
• Pressure relief/release (e.g., aerosol cans, gas cylinders, drums, or other similar containers)
• Removing prohibited items
• Segregation
• Size reduction [e.g., cutting (jaws, saws)], bending, folding, crushing (e.g., drum crusher), shredding, compacting, or similar methods that do not have a higher extent of disruption]
• Sorting
• Void filling

Some packaging of waste (e.g., personal protective equipment, maintenance waste, types of innocuous waste), as a result of surveillances/inspections and maintenance that does have a potential to create minimal airborne contamination, can occur within the 2336-W Building when the 296-W-4 exhaust stack emission system is shutdown.

VERIFICATION ACTIVITIES

Verification support activities are provided for waste and other materials that are generated on or off the Hanford Site. Verification activities can consist of the following:
• Chemical field screening
• Chemical sampling
• NDE
• Physical observation

SAMPLING ACTIVITIES

Sampling of waste generated by operations or by other onsite or offsite generators is performed. The purpose of sampling is to confirm process knowledge, characterize waste, support verification, and determine applicable land disposal requirements. Sampling can consist of the following:
• Container sampling (liquid, sludge, salt cake, composites).
• Disposition of sample returns (e.g., placement back into the parent container or another approved container)
• Field screening [e.g., pH paper, oxidizer, volatile organic analyses (VOAs), or similar screening parameters]
• Headspace gas analysis [typically in support of the WIPP Project]
• Obtaining a sample for analysis (e.g., grab, composite, , or other similar sampling techniques)
• Shipping/transferring the samples to an approved laboratory for analysis.

DECONTAMINATION ACTIVITIES

Decontamination activities have been performed since 1997. Materials, equipment, and waste can be decontaminated (e.g., free release, reduce the radiological levels, or other similar criteria) using a variety of methods. Decontamination at WRAP can consist of the following:
• Abrasive tools
• Brushing
• Cutting (e.g., removal by sawing, or other similar methods)
• Electrical repairs
• Immersion
• Rust/paint removal
• Scraping
• Washing (e.g., chemicals/detergents)

In addition, WRAP also performs decontamination of WRAP structures (e.g., building walls, glove boxes, or other similar surfaces) by any of the above methods.

MAINTENANCE ACTIVITIES

Because of the age of WRAP, current mission, future mission, support of the cleanup of the Hanford Site, as well

as waste and other materials from offsite generators, a variety of preventative and/or repair maintenance activities are performed at WRAP. Some maintenance activities involve the shutdown of the 296-W-4 exhaust stack. Maintenance activities can consist of the following:
• Calibrations
• Crane maintenance (bridge crane, jib crane, A frame hoist)
• Electronic systems functional checks and repairs [e.g., continuous air monitors (CAMs), personnel contamination monitors (PCMs), or other similar equipment]
• Painting
• Rollup doors
• Scale systems
• Stack systems (e.g., fan lubes or other similar maintenance activities)
• Transformers

Certain maintenance activities (e.g., wire rope inspections, lubrication, functional tests, calibrations, or similar innocuous activities) that do have a potential to generate minimal airborne contamination can occur within the 2336-W Building when the 296-W-4 exhaust stack emission system is shutdown.

WASTE TREATMENT ACTIVITIES

WRAP is a treatment facility permitted by the Washington State Department of Ecology (Ecology). Treatment activities can consist of the following:

Amalgamation
Deactivation
• Solidification or absorption of free liquids
• Microencapsulation
• Macroencapsulation
• Neutralization of corrosives
• Volume Reduction of waste (e.g., compaction)

STORAGE ACTIVITIES

WRAP is permitted for waste storage by Ecology. WRAP also stores other materials (e.g., chemicals, equipment, or similar materials) to support operations. Storage can consist of the following:
• Container storage (e.g., boxes, drums, ten-drum over packs (TDOP), transuranic package transporter containers, standard waste boxes, or similar containers)
• Equipment storage
•NucFil replacement

NucFil replacement will be done by reinstalling a filter. This activity will consist of sealing an unvented glove bag over the damaged filter, replacing the filter and removing the glove bag. Negligible emissions are assumed for this activity such that they are encompassed within the overall estimate of emissions for storage activities.

EQUIPMENT, MATERIALS, AND WASTE MOVEMENT ACTIVITIES

The movement of materials, equipment, waste, chemicals, or similar items involves the receipt and/or packaging/repackaging, transferring/shipping, and the movement and/or relocation within the WRAP TSD unit boundary. The movement of these items is necessary to support operations, maintenance, or similar activities. Movement activities (e.g., using a forklift, crane, truck, dolly, personnel, or similar equipment) can consist of, but are not limited to, the following:
• Placing and storing chemical products in flammable cabinets, over packing or other approved storage locations
• Receiving waste (e.g., liquid, solid, semi solid) for storage and/or treatment
• Waste container transfers (among outdoor storage pads, within buildings, glove boxes, or other approved locations)

HOUSEKEEPING ACTIVITIES

Housekeeping activities involve maintaining WRAP in a clean and orderly condition. Housekeeping activities include the following:
• Dusting
• Mopping (e.g., squeegees or other similar techniques)
• Picking up debris
• Removal of trash.
• Sweeping (e.g., brooms)
• Vacuuming
• Wiping (e.g., sponges, towels, or other similar methods)

SURVEILLANCE ACTIVITIES

Surveillance activities involve walking down and inspecting various areas, systems, and components. Surveillances typically consist of daily, weekly, and monthly inspections of waste containers, buildings, or similar locations. Surveillances are subject to change (adding, deleting and/or modifying) as operations, maintenance, engineering, and radiological control dictates. The following are examples of surveillances currently performed at WRAP:
• Cold weather surveillances (typically done between October 1 and March 31)
• Container storage areas (buildings, pads, conex boxes, or other similar locations)
• General condition of building structures
• Inspection/testing of equipment (e.g., 296-W-4 exhaust system sampling and components, differential pressure gauges, or similar equipment)
• Inspection/testing of HEPA-filtered vacuums
• Radiological surveys
• Safety equipment (e.g., decontamination showers, eye wash stations, first aid kits, fire extinguishers, fire suppression systems, communication equipment, spill kits, emergency lighting, Scott Air Pak or other similar units, personnel contamination monitors, masks)
• Treatment and storage locations and ancillary equipment
Surveillances, inspections, and maintenance activities that have the potential to create minimal airborne contamination can occur within the 2336-W Building when the 296-W-4 exhaust stack emission system is shutdown.

5) PROCESS DESCRIPTION - Nondestructive Examination/Nondestructive Assay Systems

This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The NDE/NDA area is used to examine and to certify LLW, MLLW, TRU, and TRU mixed waste container contents without opening the containers.
The primary function of NDE is to examine the physical contents of containers entering and leaving the WRAP to determine whether there are any noncompliant items or unacceptable conditions in the containers. This examination of the containers is accomplished by the use of the real-time radiography (RTR) systems. The RTR systems consists of an x-ray imaging systems used to identify noncompliant items, such as free or containerized liquids, compressed gas containers including aerosol cans, and other suspected dangerous waste/materials. Data from the x-ray examinations are entered into the data management system for each container.

The primary function of NDA is to determine the activity levels of radio nuclides in the radioactive material entering and leaving the WRAP. This information is used to categorize the radioactive material, provide inventory control information, determine appropriate handling of individual containers, and to determine if the material meets applicable transportation and disposal criteria. The NDA equipment includes passive-active neutron assay systems and/or gamma energy analysis systems. Data from the analysis of each container are entered into the data management system.

6) PROCESS DESCRIPTION - Process Area

This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The process area consists of four glove box lines: a TRU waste process glove box, a TRU waste restricted waste management (RWM) glove box, a LLW process glove box, and a LLW RWM glove box. In the process glove boxes, drums are opened, the contents sorted and sampled, if necessary, noncompliant items are removed and transferred to the RWM glove boxes, and the remaining compliant waste repackaged into new drums.

The airborne radiological contaminants produced at the WRAP are expected to be primarily generated in these glove boxes. Incoming drums generally are opened in glove boxes. However, it might be necessary to loosen a lid or replace a damaged lid outside of a glove box. For example, an 85-gal drum lid is removed by placing the drum in an air exhauster canister, which vents to the process area through a high-efficiency particulate air (HEPA)-like filter. No credit is taken for this HEPA-like filter so far as estimating the abated emissions. Emissions from the process area will exhaust through the 296-W-4 stack emission system.

TRANSURANIC WASTE PROCESS LINE

The TRU waste process glove box line consists of stainless steel modular glove boxes that are bolted together in a linear configuration. Glove box ventilation is of the once through type. Air is drawn from the process room, through a nontestable high efficiency process filter, and into the glove box. The air is exhausted from the glove box through another nontestable high efficiency process filter to the combined glove box exhaust system.
Process operations are performed inside of the glove boxes by using the gloves and/or remote controlled manipulators. Drums are loaded into the glove box through an airlock and sealed type entry systems. Noncompliant items are labeled and transferred to the TRU RWM glove box using a reusable transfer system. Compliant waste is repackaged into new containers.

TRANSURANIC WASTE RESTRICTED MANAGEMENT LINE

The TRU waste RWM glove box line is constructed of stainless steel. Glove box ventilation is of the once through type. Air is drawn from the process room, through a nontestable high efficiency process filter, and into the glove box. The air is exhausted from the glove box through another nontestable high-efficiency process filter to the combined glove box exhaust system. Noncompliant waste is received from the TRU waste process line in a reusable transfer container.

The treatment and repackaging operations that occur in the TRU waste RWM glove box could include other treated LLW packages being loaded into new drums and routed to the LLW process glove box for compaction or loaded out of the RWM glove box for storage, disposal, or additional treatment.

LOW LEVEL WASTE PROCESS LINE

The LLW/TRU process glove box line consists of stainless steel modular glove boxes that are bolted together in a linear configuration. Glove box ventilation is of the once through type. Air is drawn from the process room, through a nontestab1e high efficiency process filter, and into the glove box. The air is exhausted from the glove box through another nontestable high efficiency process filter to the combined glove box exhaust system.

Drums enter the glove box through an airlock entry system. Noncompliant items are bar code labeled and transferred to the LLW RWM or TRU/RWM glove box using a reusable transfer system. Compliant waste is compacted and repackaged into new drums. (WAC 246-247-040(5), WAC 246-247-060(5))

7) PROCESS DESCRIPTION - Shipping and Receiving

This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Containers are delivered to and transferred from the shipping and receiving area by truck or forklift. In the shipping and receiving area, incoming boxes and drums are unloaded, visually inspected, labeled, and radiologically surveyed. The resulting information pertaining to each container is entered into the data management system.

Following visual inspection, containers are transferred to the lag storage area. From the lag storage area, incoming drums are transferred to a weigh station and on to the NDE/NDA area for further characterization. If there are any noncompliant items or unacceptable conditions discovered in the NDE process, the containers are transferred to the process area for repackaging.

Once characterized, verified, and/or certified, the certified TRU waste is loaded into transuranic package transporter (TRUPACT-2 or equivalent) shipping casks for shipment to the Waste Isolation Pilot Plant (WIPP) in New Mexico or other approved facility.

Emission Unit ID: 200

200W P-241SX115-001

241-SX-115

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 3.25 ft. 0.99 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SX-115 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1177

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 201

200W P-241SX113-001

241-SX-113

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 3.08 ft. 0.94 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SX-113 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1175

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 202

200W P-241S111-001

241-S-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 3.96 ft. 1.21 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-S-111 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1161

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 203

200W P-241S-001

241-S-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 3.33 ft. 1.01 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-S-112 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1162

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 205

200E P-296A041-001

296-A-41

This is a MINOR, ACTIVELY ventilated emission unit.

241-AP TANK FARM

Emission Unit Information

Stack Height: 29.25 ft. 8.92 m. Stack Diameter 2.33 ft. 0.71 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 35.05 ft/second. 10.68 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Heater	1	2 parallel flow paths with 1 heater
	HEPA	2	2 parallel flow paths with 2 HEPAs in series
	Fan	1	2 parallel flow paths, minimum of 1 in operation at a time; annulus exhauster

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a DST annulus exhauster used to support tank farm operations and ventilates the annuli of DSTs 241-AP Tank Farm. The tanks store radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The annulus is the space between the inner wall and outer wall of the tank, and is used for leak detection. The emission unit operates intermittently.

Emission Unit ID: 216

200E P-296A043-001

296-A-43

This is a MINOR, ACTIVELY ventilated emission unit.

241-AY/AZ TANK FARM

Emission Unit Information

Stack Height: 35.50 ft. 10.82 m. Stack Diameter 0.83 ft. 0.25 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: 30.56 ft/second. 9.31 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	1	2 parallel flow paths
	HEPA	1	2 parallel flow paths
	Fan	1	2 parallel flow paths
	Isolation Damper	1	Allows for operation of one flow path at a time

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a building/facility exhauster that is used to ventilate building and facility operations such as but not limited to process vessels, contaminated rooms, cells, glove boxes, hoods, abandoned facilities awaiting decommissioning, and vaults that support tank farm operations, maintenance, and surveillance activities for tank farms. The exhauster can be used to support current surveillance, maintenance activities, operations or decommissioning, decontamination, and cleanup activities within the building/facility. Many of the activities other than normal surveillance, maintenance, and operation support will be or are regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a building/facility exhauster ventilation system that operates intermittently.

Emission Unit ID: 217

200E P-296A018-001

296-A-18

This is a MINOR, ACTIVELY ventilated emission unit.

241-AY Tank Farm

Emission Unit Information

Stack Height: 12.50 ft. 3.81 m. Stack Diameter 1.33 ft. 0.41 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 47.75 ft/second. 14.55 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	2	2 parallel flow paths with 2 HEPAs in series
	Fan	1	2 parallel flow paths
	Heater	1	2 parallel flow paths

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a DST annulus exhauster used to support tank farm operations and ventilates the annulus of DST 241-AY-101. The tank stores radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The annulus is the space between the inner wall and outer wall of the tank, and is used for leak detection. The emission unit operates intermittently.

Emission Unit ID: 218

200E P-296A019-001

296-A-19

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AY Tank Farm

Emission Unit Information

Stack Height: 12.90 ft. 3.93 m. Stack Diameter 1.25 ft. 0.38 m.

Average Stack Effluent Temperature: 83 degrees Fahrenheit. 28 degrees Celsius.

Average Stack ExhaustVelocity: 52.30 ft/second. 15.94 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Filter Stages/Bank	2	In series 4 filters per stage/bank
	Fan	1	Annulus Exhauster

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	Cs-137, Total Alpha, Total Beta	Continuous

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a DST annulus exhauster used to support tank farm operations and ventilates the annulus of DST 241-AY-102. The tank stores radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The annulus is the space between the inner wall and outer wall of the tank, and is used for leak detection. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-A-19 Annulus Exhauster Operation (Replaces NOC 877)	AIR 15-823	8/19/2015	972

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.64E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 7.28E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

This emission unit is a double shell tank (DST) annulus exhauster used to support tank farm operations and ventilates the annulus of DST 241-AY-102. The tank annulus is located between the 75-ft diameter primary tank and the 80-ft diameter secondary liner resulting in a nominal 2.5-ft wide annular space wrapping around the entire circumference of the primary tank. Several penetrations, or risers, of various sizes exist at the top of the secondary liner, which allows access into the annulus space. This access is used for a variety of activities, including but not limited to visual inspection cameras, sampling, ultrasonic testing crawlers, emergency pumps, and leak detection instruments. The annulus provides secondary containment when the primary tank fails and also provides the ability to cool the primary tank to reduce thermal stresses. The emission unit operates intermittently. The annulus ventilation systems minimize potential corrosion due to condensation by removing moisture through evaporation. The ventilation air accelerates the evaporation rate by circulating outside air through the annulus. The ventilation air also dilutes and removes any flammable gas generated within the annulus if there is waste in the annulus.

The Tank 241-AY-102 annulus ventilation system's exhaust fan draws outside air into an intake consisting of a damper and two pre-filters configured in series. Currently, the air is routed to the air distribution ring centered under the primary tank floor. The air flows from the air distribution ring through the air distribution slots in the refractory to the annulus. Exhaust air from the tank annulus is drawn out through underground ducts. The ducts merge aboveground to form a common vent header. For leak-detection purposes, a vacuum pump extracts an air sample from the header located upstream of the exhauster HEPA filters and feeds this air sample to a CAM. The header connects to the exhaust train where tank annulus exhaust air continues through two banks of HEPA filters configured in series. Filtered air exits the annulus ventilation system through an exhaust fan and stack and is released to the environment. The stack is fitted with a record sampler system that samples the air stream for radioactive particulates.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 241 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 243 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ba - 137 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	C - 14 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cd - 113 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Cm - 242 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 244 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Co - 60 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 134 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 137 6.90E+04 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE.
Eu - 152 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 154 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
H - 3 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	I - 129 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Nb - 93 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ni - 59 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ni - 63 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Np - 237 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pa - 231 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pu - 240 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 241 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ra - 226 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ra - 228 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ru - 106 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sb - 125		

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Se - 79 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sm - 151 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sn - 126 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sr - 90 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Tc - 99 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Th - 229 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Th - 232 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 232 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
U - 233 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 234 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 235 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
U - 236 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Y - 90 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Zr - 93 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

4) WDOH ALTERNATE APPROVAL-Release Fractions
The PTE calculation shall be based on the inventory of material to be managed (tank inventory and supernate) using the release fraction for the tank inventory of 1.0 E-3 for tank inventory and 8.0 E-5 for supernate.

5) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI (WAC 246-247-040(5) and WAC 246-247-110(8)).

6) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels (WAC 246-247-040(5) and WAC 246-247-060(5)).

7) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1969 and the applicable stack monitoring system inspection requirements referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field check requirements (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

8) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on ASME N510 and ASME N511, and shall have a minimum efficiency of 99.95%. In addition, HEPA filter replacement requires in-place leak testing of the HEPA filters (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

9) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is also monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters (WAC 246-247-040(5)).

Emission Unit ID: 228

200E P-296A030-001

296-A-30

This is a MINOR, ACTIVELY ventilated emission unit.

241-AN TANK FARM

Emission Unit Information

Stack Height: 23.40 ft. 7.13 m. Stack Diameter 2.00 ft. 0.61 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 32.49 ft/second. 9.90 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	2 parallel flow paths with 1 de-entrainer in each train
	Heater	1	2 parallel flow paths with 1 heater in each train
	Fan	1	2 parallel flow paths with 1 fan in each train
	HEPA	2	2 parallel flow paths with 2 HEPAs in series in each train.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a DST annulus exhauster used to support tank farm operations and ventilates the annuli of DSTs 241-AN Tank Farm. The tanks store radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The annulus is the space between the inner wall and outer wall of the tank, and is used for leak detection. The emission unit operates intermittently.

Emission Unit ID: 230

200E P-241C107-001

241-C-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 4.33 ft. 1.32 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-107 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1141

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 231

200E P-241C108-001

241-C-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 4.50 ft. 1.37 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-108 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1142

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 232

200E P-241C112-001

241-C-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 4.83 ft. 1.47 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-112 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1146

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 233

200E P-241C201-001

241-C-201

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 4.75 ft. 1.45 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-201 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1147

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 235

200E P-241C204-001

241-C-204

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 4.04 ft. 1.23 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-204 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1150

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 237

200E P-241C102-001

241-C-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 3.54 ft. 1.08 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-102 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1136

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 242

200E P-241C203-001

241-C-203

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.79 ft. 1.76 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-203 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1149

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 244

200E P-241C110-001

241-C-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 4.46 ft. 1.36 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-110 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1144

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 245

200E P-241C109-001

241-C-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 4.00 ft. 1.22 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-109 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1143

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 246

200E P-241C202-001

241-C-202

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 3.83 ft. 1.17 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-202 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1148

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 247

200E P-241C101-001

241-C-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 3.38 ft. 1.03 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-101 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1135

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 254

200W S-296S021-001

296-S-21

This is a MAJOR, ACTIVELY ventilated emission unit.

222-S LABORATORY

Emission Unit Information

Stack Height: 68.00 ft. 20.73 m. Stack Diameter 5.50 ft. 1.68 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 63.16 ft/second. 19.25 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	3	In series for both the primary and backup exhaust systems (222-S Lab Hot Cells)
	HEPA	1	For both primary and backup exhaust systems (222-S Lab Complex)
	Fan	3	Primary exhaust operated in parallel, serves both hot cell addtion & main lab.
	Fan	1	Backup exhaust operates independently or in parallel with primary exhaust

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, Am-241 and Pu-239	Continuous

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a laboratory building/facility exhauster that is used to ventilate building and facility operations such as but not limited to contaminated rooms, hot cells, glove boxes, and hoods, that support tank farm waste characterization activities, research and development, environmental sample analysis, and Hanford operations and remediation projects. The exhauster can be used to support current surveillance, maintenance activities, operations, decontamination, and cleanup activities within the building/facility. The emission unit is a laboratory building/facility exhauster ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
License to Operate the 222-S Laboratory (Replaced NOC ID 954)	AIR 17-135	1/24/2017	1063

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.02E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 3.00E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may

be conducted.

The 222-S Laboratory was built in the early 1950's to provide analytical services, first for the reduction and oxidation (REDOX) process, and later for several programs and plant operations. In 1994 Project W-041H, Environmental Hot Cell Expansion, provided the hot cell facility, an addition ot the east end of the 222-S Laboratory that includes the 11A hot cells and associated fume hoods. The increased hot cell capacity was required to support an increased demand for analytical services.

The 222-S Laboratory primarily receives, processes, and stores samples from various projects and packages samples for shipment to other onsite and offsite laboratories. The 222-S Laboratory is also used for sample analysis, testing, and process development. The majority of samples are from the single-shell tanks (SST) and double-shell tanks (DST) in the tank farm system with a few samples coming from other facilities such as the 242-A Evaporator, K Basins Project, Plutonium Finishing Plant (PFP), and the 219-S Waste Handling Facility. For samples that require receipt into a hot cell, any hot cell may be used.

The 222-S Laboratory is also used for waste management activities, such as waste transfers to the 219-S Waste Handling Facility and other activities supporting laboratory and other Hanford Site operations. The 222-S Laboratory manages waste generated at 222-S Laboratory and small amounts of radioactive waste not generated as the 222-S Laboratory (i.e., for short-term storage or transfer to the 219-S Tank System).

The 222-S Laboratory undergoes operation and maintenance activities that occur in the radioactive portion of the facility and contribute to emissions through the 296-S-21 stack. Nonanalytical portions of the facility that exhaust through the 296-S-21 stack are the basement, tunnels, and other miscellaneous sources (e.g., vented storage cabinets).

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 241 6.76E+01 Identified as contr buting greater than 0.1 mrem/yr to the MEI, greater than 10% of the potential TEDE to the MEI, and greater than 25% of the TEDE to the MEI after controls.	Am - 243 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ba - 137 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	C - 14 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cd - 113 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Cm - 242 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 244 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Co - 60 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 134 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 137 3.16E+03 Identified as contr buting greater than 0.1 mrem/yr to the MEI, greater than 10% of the potential TEDE to the MEI, and greater than 25% of the TEDE to the MEI after controls.
Eu - 152 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 154 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
H - 3 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	I - 129 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Nb - 93 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ni - 59 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents		

less than 25% of the abated dose.

Ni - 63

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 237

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 231

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 238

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 239 6.85E+01

Identified as contr buting greater than 0.1 mrem/yr to the MEI, greater than 10% of the potential TEDE to the MEI, and greater than 25% of the TEDE to the MEI after controls.

Pu - 240

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 241

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 242

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 228

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 106

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 125

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 151

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 126

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 90 9.00E+03

Identified as contr buting greater than 0.1 mrem/yr to the MEI

Tc - 99

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 229

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 232

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 232

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 90

Contr butes less than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 93

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

4) STANDARDS-ASME AG-1 Equivalency
HEPA Filters for the S-21 exhauster will meet the requirements of HNF-S-0477 and/or HNF-S-0552 which assure equivalency to ASME AG-1: Code on Nuclear Air and Gas Treatment.

5) STANDARDS-Quality Assurance
Quality Assurance program will meet the requrements of 40 CFR 61, Appendix B, Method 114.

6) ABATEMENT TECHNOLOGY-ANSI N13.1 Compliance
Air sampling will be conducted in accordance with ANSI/HPS N13.1-1999: Sampling and Monitoring Releases of Airborne Radioactive Substances from the Stacks and Ducts of Nuclear Facilities.

Emission Unit ID: 255

200E P-241BX104-001

241-BX-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 15.00 ft. 4.57 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BX-104 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1114

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 256

200E P-241BX110-001

241-BX-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 3.46 ft. 1.05 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BX-110 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1120

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 257

200E P-241BX103-001

241-BX-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 3.25 ft. 0.99 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BX-103 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1113

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 258

200E P-241BX107-001

241-BX-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 3.17 ft. 0.97 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BX-107 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1117

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 259

200E P-241BX101-001

241-BX-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 4.65 ft. 1.42 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BX-101 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1111

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 260

200E P-241BX112-001

241-BX-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 3.63 ft. 1.11 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BX-112 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1122

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 261

200E P-241BX106-001

241-BX-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 4.00 ft. 1.22 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BX-106 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1116

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 262

200E P-241BX102-001

241-BX-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 4.75 ft. 1.45 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BX-102 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1112

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 263

200E P-241BX109-001

241-BX-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 2.63 ft. 0.80 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BX-109 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1119

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 264

200E P-241BX111-001

241-BX-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 3.08 ft. 0.94 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BX-111 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1121

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 265

200E P-241BX108-001

241-BX-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 3.50 ft. 1.07 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BX-108 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1118

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 266

200E P-241B105-001

241-B-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 2.50 ft. 0.76 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-105 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1099

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 267

200E P-241B201-001

241-B-201

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 4.92 ft. 1.50 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-201 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1107

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 268

200E P-241B108-001

241-B-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 2.50 ft. 0.76 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-108 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1102

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 269

200E P-241B101-001

241-B-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.17 ft. 1.58 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-101 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1095

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 270

200E P-241B102-001

241-B-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 2.96 ft. 0.90 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-102 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1096

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 271

200E P-241B204-001

241-B-204

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 2.58 ft. 0.79 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-204 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1110

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 272

200E P-241B104-001

241-B-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 4.71 ft. 1.44 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-104 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1098

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 273

200E P-241BX105-001

241-BX-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 3.79 ft. 1.16 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BX-105 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1115

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 274

200E P-241B112-001

241-B-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 2.50 ft. 0.76 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-112 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1106

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 275

200E P-241B107-001

241-B-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 3.42 ft. 1.04 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-107 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1101

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 276

200E P-241B111-001

241-B-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 4.88 ft. 1.49 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-111 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1105

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 277

200E P-241B109-001

241-B-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 2.00 ft. 0.61 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-109 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1103

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 278

200E P-241B110-001

241-B-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 3.75 ft. 1.14 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-110 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1104

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 279

200E P-241B103-001

241-B-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.58 ft. 1.70 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-103 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1097

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 280

200E P-241B202-001

241-B-202

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 2.63 ft. 0.80 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-202 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1108

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 281

200E P-241B106-001

241-B-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 2.67 ft. 0.81 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-106 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1100

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 282

200E P-241B203-001

241-B-203

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 2.50 ft. 0.76 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-B-203 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1109

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 283

200E P-241BY101-001

241-BY-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 3.29 ft. 1.00 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BY-101 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1123

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 284

200E P-241BY105-001

241-BY-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BY-105 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1127

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 285

200E P-241BY106-001

241-BY-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 3.17 ft. 0.97 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BY-106 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1128

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 286

200E P-241BY102-001

241-BY-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 4.29 ft. 1.31 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BY-102 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1124

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 287

200E P-241BY112-001

241-BY-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 2.42 ft. 0.74 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BY-112 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1134

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 288

200E P-241BY103-001

241-BY-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 4.46 ft. 1.36 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BY-103 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1125

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 289

200E P-241BY104-001

241-BY-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 3.46 ft. 1.05 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BY-104 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1126

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 290

200E P-241BY109-001

241-BY-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 3.08 ft. 0.94 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BY-109 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1131

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 291

200E P-241BY108-001

241-BY-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 14.50 ft. 4.42 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BY-108 SST G-1 Breather Filter Operation	AIR 17-710	7/27/2017	1130

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) ABATEMENT TECHNOLOGY-G-1 HEPA Annual Leak Testing
The G-1 HEPA filters are in-place leak tested annually and will have a minimum leak test efficiency of 99.95%. G-1 filters will be replaced when aerosol testing performance criteria are not met.

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 292

200E P-241BY111-001

241-BY-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 2.25 ft. 0.69 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BY-111 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1133

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 293

200E P-241BY110-001

241-BY-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 3.25 ft. 0.99 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BY-110 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1132

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 294

200E P-241BY107-001

241-BY-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 3.79 ft. 1.16 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-BY-107 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1129

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 301

200E P-2025E ETF

296-E-1

This is a MINOR, ACTIVELY ventilated emission unit.

Effluent Treatment Facility(ETF)

Emission Unit Information

Stack Height: 51.00 ft. 15.54 m. Stack Diameter 6.00 ft. 1.83 m.

Average Stack Effluent Temperature: 72 degrees Fahrenheit. 22 degrees Celsius.

Average Stack ExhaustVelocity: 29.90 ft/second. 9.11 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
Vessel Off-Gas System	HEPA	3	1 heater and 2 filters in series, with 2 parallel fans (minimum of 1 in operations). VOG discharges into building ventilation.
Vessel Off-Gas System	Fan	1	
Building Ventilation System	HEPA	2	3 parallel flowpaths each with 1 filter and 1 fan; minimum 2 in operation.
Building Ventilation System	Fan	2	Serves both areas.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/ year

Sampling Requirements Per the sitewide ambient air monitoring program and section 5.0 of the FF-01 license, samples will be collected from the existing near-facility and far-field monitoring stations.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at the 200 Area Effluent Treatment Facility (ETF) receive and treat liquid effluents at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the 200 Area Effluent Treatment Facility (Replaces NOC 905)	AIR 15-1220	12/22/2015	999

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.51E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The operation of the Liquid Effluent Retention Facility/200 Area Effluent Treatment Facility (LERF/ETF), which includes the load-in station and load-in station filter skid.

To initiate acceptance of a new wastewater into LERF/ETF, the generator is required to complete and certify a Waste Profile Sheet (WPS) with the supporting analytical data and documentation attached. Based on the

WPS, a waste acceptability review is conducted to assess the waste characterization data against the facility waste acceptance criteria as derived from environmental, safety, and operational requirements. The NOC approval conditions are specifically considered in this review process. The acceptability of waste is reviewed when the process generating the waste changes, or at a minimum of every two years.

Once the WPS has been certified by the generator and approved by the LERF/ETF representative, the wastewater transfer can be scheduled. Incoming wastewater can be added directly to the ETF process or received at LERF or the load in station. LERF can receive wastewaters via underground pipelines from generator facilities, via pipeline from the load in station, or directly through a series of access ports located at each basin. The load in station accommodates wastewater receipt via container (e.g., drums, carboys, and tankers).

ETF Wastewater Treatment Process
The ETF wastewater treatment process is comprised of a main treatment train and a secondary treatment train. The main treatment train provides for the removal or destruction of dangerous and radioactive contaminants from incoming wastewater. After treatment, the effluent is transferred to the verification tanks where it is sampled then discharged. Treated effluent is comparable to deionized water and contains tritium, which cannot be economically removed. Contaminants removed in the main treatment train are concentrated in the secondary treatment train. The contaminants are heated and dried to a powder form or removed as sludge and dried by the addition of absorbents. These residues are containerized and disposed onsite as radioactive waste.

LERF Operations
LERF provides temporary storage, as well as flow and pH equalization, for wastewaters prior to treatment at ETF. LERF consists of three high density polyethylene double lined basins, each with an operating capacity of 29.5 million L. Each basin has a leachate collection system located between the primary and secondary composite liner systems and is also equipped with a floating low density polyethylene cover firmly attached to the sidewalls to prevent unwanted material from entering the basins and avoid evaporation of wastewater. To prevent the buildup of gas, each basin is passively vented through vent pipes. Gases exiting through a vent pipe are channeled through a carbon adsorption filter.

Load-in Station Operations
The load in station consists of two unloading bays for liquid waste transfers. The first bay has two load in tanks, a sump, transfer pumps, a skid mounted filtration system, level instrumentation for tanker trucks, underground transfer lines that allow transfers to either LERF or ETF, and leak detection capabilities for the containment basin and transfer lines. The second bay consists of two pumps that will unload a tanker, a filter skid to remove excess solids, and a 24,500 L holding tank. The holding tank is emptied using the pumping system associated with the other unloading bay. Containerized wastewaters received at the load in station are typically routed through the filter skid. When solids buildup causes differential pressure across a filter housing to become excessive, the filter elements are replaced. The filtration system is shut down, the system is vented to atmosphere by opening a quick release vent cap on top of each filter housing, and solution in the housing is drained to the load in station sump. The housing is then opened, and the spent filter elements are placed in a disposal container. After filter change out, the sump is emptied to the load in station, LERF, or ETF. The capability to filter sump discharges is also provided at the load in station. Small shipments that cannot be pumped directly into the filter skid are first drained into the sump, then pumped through the filter skid using the sump pump.

Wastewater tanker inspection, pressure testing, and repair are also conducted at the load in station as needed to meet annual U.S. Department of Transportation certification requirements. Tankers, which may contain a wastewater heel, are pressurized with compressed air, leak checked at 80 percent of service pressure, and integrity tested at 150 percent of service pressure. After the test is complete, the compressed air is gradually vented from the tanker to the atmosphere. Minor repairs (e.g., seal replacement) are performed, as needed, for successful completion of the certification test.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.02E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	4.45E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate is assumed to be Pu-239/240. ETF release rates are based on ETF operating capacity + 5 million gallon

storage capacity (54.3 million gallons/yr plus 5.0 million gallons = 59.3 million gallons/yr). In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

Am - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

B/G - 0	2.82E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/gamma release rate is assumed to be Sr-90/Cs-137. ETF release rates are based on ETF operating capacity + 5 million gallon storage capacity (54.3 million gallons/yr plus 5.0 million gallons = 59.3 million gallons/yr). In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

C - 14		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 144		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 244		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 154		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 155		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

H - 3		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 129		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

K - 40		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 54		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 22		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 94		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 237		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 238		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 239/240		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.

Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.

Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Ce - 144	Cm - 244	Co - 60
Cs - 134	Cs - 137	Eu - 154	Eu - 155	H - 3
I - 129	K - 40	Mn - 54	Na - 22	Nb - 94
Np - 237	Pu - 238	Pu - 239/240	Pu - 241	Ra - 226
Ru - 106	Sb - 125	Se - 79	Sr - 90	Tc - 99
U - 233	U - 234	U - 235	U - 236	U - 238
Zn - 65	Zr - 95			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) APPROVED ACTIVITIES

The following activities are approved for the 296-E-1 Emission Unit Point-Source Emissions:
- ETF operations and maintenance.
- Containerized wastewater additions to the ETF process.
- Leaks into the ETF secondary containment.
- Secondary waste packaging and storage.

(WAC 246-247-040(5))

5) DIFFUSE AND FUGITIVE OPERATIONS AUTHORIZED

This NOC is authorized to incorporate the most current version of EU 1425 Diffuse and Fugitive Operations at LERF and ETF.
(WAC 246-247-040(5))

6) MONITORING - Periodic Confirmatory Monitoring

Periodic Confirmatory Monitoring (PCM) shall be taken to verify low emissions from the ETF stack using a probe in-stack arrangement. The PCM sampling frequency shall be a 4 week sample/year. Although a number of different radionuclides could be present in the ETF exhaust, for the purpose of estimating the TEDE to the MEI, all alpha is conservatively assumed to be Pu-239/240 and its daughter products, and all beta is conservatively assumed to be Sr-90 and its daughter products.
(WAC 246-247-040(5))

7) SAMPLING FREQUENCY - 4 Week Sample/Year Definition

A 4 week sample/year shall be defined as any combination of sampling periods, whose sum is equivalent to 28 days of emission unit operating time.
(WAC 246-247-040(5))

Emission Unit ID: 302

200E P-241AX104-001

241-AX-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-AX TANK FARM

Emission Unit Information

Stack Height: 3.96 ft. 1.21 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-AX-104 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1094

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 303

200E P-241AX102-001

241-AX-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-AX TANK FARM

Emission Unit Information

Stack Height: 3.75 ft. 1.14 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-AX-102 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1092

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 304

200E P-241AX103-001

241-AX-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-AX TANK FARM

Emission Unit Information

Stack Height: 3.83 ft. 1.17 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-AX-103 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1093

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 305

200E P-241AX101-001

241-AX-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-AX TANK FARM

Emission Unit Information

Stack Height: 3.96 ft. 1.21 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-AX-101 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1091

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 308

200W P-213W-001

296-W-3

This is a MINOR, ACTIVELY ventilated emission unit.

213-W

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	Non-Operational	This emission unit is inactive and will require an NOC to resume operation or a report of closure to de-register.
	Fan	Non-Operational	This emission unit is inactive and will require an NOC to resume operation or a report of closure to de-register.
	Prefilter	Non-Operational	This emission unit is inactive and will require an NOC to resume operation or a report of closure to de-register.
	Heater	Non-Operational	This emission unit is inactive and will require an NOC to resume operation or a report of closure to de-register.
	Deentrainer	Non-Operational	This emission unit is inactive and will require an NOC to resume operation or a report of closure to de-register.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
	Non-Operational		

Sampling Requirements Non-Operational

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The emission unit is non-operational, removed from service and will not be utilized for future tank farm operations. If the emission unit is required for tank farm operations, the proper regulatory requirements and permits will be obtained prior to returning the emission unit to service. Closure is pending submittal of closure form and final inspection and approval by WDOH.

Emission Unit ID: 314

200W P-291T001-001

291-T-1

This is a MAJOR, ACTIVELY ventilated emission unit.

T- PLANT COMPLEX

Emission Unit Information

Stack Height: 200.00 ft. 60.96 m. Stack Diameter 6.50 ft. 1.98 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 20.10 ft/second. 6.13 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	1	
	HEPA	2	In series
	Fan	2	2 in parallel (with one as a backup)

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114 NDA as detailed in conditions below.	All radionuclides that contribute greater than 10 percent of the potential-to-emit TEDE to the MEI, greater than 0.1 mrem/yr potential-to-emit TEDE to the MEI, and greater than 25 percent of the TEDE to the MEI after controls.	Particulates shall be continuously sampled and analyzed every two weeks for gross alpha and gross beta/gamma, composited quarterly, and analyzed isotopically.

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the T-Plant Complex involve waste management operations in support of decontamination and decomissioning operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Consolidated T-Plant Operations (Replaces NOC 830)	AIR 17-206	2/16/2017	1041

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.60E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

This consolidated T-Plant license supersedes all radioactive air licenses for 291-T-1.

a. This approval subsumes those activities approved in two previous license approvals, retains/revises the specific conditions and limitations of those approvals, and replaces them as the radioactive air license for T-Plant:

i. AIR 03-1208 (NOC ID # 445, "Storage in T-Plant Complex of Sludge from K-Basins")
ii. AIR 01-1010 (NOC ID # 499, "T-Plant Complex Fuel Removal Project")

b. With additional conditions and limitations provided herein, this approval also extends to new activities discussed in the NOC application "Radioactive Air Emissions Notice of Construction for Consolidated T Plant Operations", DOE/RL-2004-50, Rev. 0, September, 2004, described briefly:
i. Receipt, Storage, Treatment, and Load out of Contact-Handled and Remote-Handled Transuranic (TRU) and Transuranic Mixed Waste (M-91Initiative)
ii. Treatment (in addition to storage) of K-Basin Sludge from the North Load out Pit (NLOP)
iii. Such activities considered routine at T Plant as are described in succeeding conditions.

Activities a)i through a)ii may emit radioactive air through 291-T-1.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.20E+02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241 isotopic distribution based on destrutive analysis of pre-filter four	1.38E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	1.46E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239/240	1.38E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sr - 90	1.94E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):
Am - 241 Cs - 137 Pu - 239/240 Sr - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) RADIOACTIVE MATERIALS ACTIVITIES - Radiation Control Procedures
All activities involving radioactive materials shall be conducted in accordance with radiation control procedures approved per applicable QA progrm.

5) CALIBRATE DP GAUGES- 291-T-1 HEPA Filter
Calibrate all differential pressure gauges associated with 291-T-1 HEPA filters annually.

6) RECEIPT STORAGE, TREATMENT, and LOADOUT of CONTACT HANDLED and REMOTE-HANDLED TRANSURANIC (TRU) and TRANSURANIC MIXED (TRUM)

M-91 Initiative:

A. M-91 project activities shall be conducted in T-Plant within the head end, the railroad tunnel, and/or the T-Plant Canyon. M-91 waste shall be received at the head end or at the railroad tunnel. M-91 waste is remote or contact handled transuranic, transuranic mixed, mixed, or mixed low level waste.

B. M-91 waste containers shall be opened and their contents treated in the head end of T-Plant only under

containment, containment being defined here as either vented and HEPA-filtered glove box/bag, sealed glove box/bag, ventilated and HEPA-filtered containment tent or ventilated and HEPA-filtered solid-structure temporary containment, or PTRAEU. Where active ventilation is provided, that ventilation shall discharge into the T-Plant canyon so that radioactive air emissions originating in this process are further controlled by the 291-T-1 ventilation system controls. Procedures (approved in accord with applicable QA program) to ensure the initial integrity of the containment and to ensure the continued integrity of the containment structures shall be followed, shall include periodic radiological surveys, and shall be kept available for WDOH review. The head end will be posted based on radiological conditions in accordance with radiation control procedures approved per applicable QA program.

C. M-91 waste containers shall be opened and their contents treated in the railroad tunnel and/or canyon of T-Plant, in accord with radiological control procedures (approved in accord with applicable QA program).

D. Lower risk M-91 containers may be received at the head end of T-Plant, and higher risk M-91 containers shall be received at the railroad tunnel. Risk criteria, including radiological risk considerations, governing receipt location shall be developed and documented.

E. Surface contamination and dose rate limits on M-91 waste containers received at T-Plant shall be governed by approved solid waste acceptance procedures. Deviations from approved solid waste acceptance procedures are allowed under a controlled waiver process. Stand-alone solid waste acceptance documents specifying surface contamination and dose rate limits shall be developed and approved for any M-91 containers received under the waiver process. These procedures shall be kept readily available for WDOH review. Documentation shall be sufficient to allow ready identification of the criteria under which each waste container is accepted, and shall note definite compliance with the applicable criteria on receipt.

F. Applicable surface contamination/dose rate criteria shall be documented for each container of M-91 waste repackaged at T-Plant for transshipment. Documentation of applicable criteria and compliance thereto shall be maintained for M-91 waste containers shipped from T-Plant.

G. Receipt, Storage, Treatment, and Load out of Contact-Handled and Remote-Handled Transuranic (TRU) and Transuranic Mixed Waste (M-91Initiative) includes the following activities:
1) Receiving.
2) Sorting.
3) Storing.
4) Size Reduction.
5) Repackaging.
6) Containerizing.
7) Load out.
8) Treatment.

7) ROUTINE T-PLANT ACTIVITIES:

A) Packaging and Repackaging Waste - Packaging and repackaging activities are performed for waste generated at T-Plant as well as for onsite and offsite generators. Packaging and repackaging activities are:
1) Sorting.
2) Segregation.
3) Removing prohibited items.
4) Compositing/aggregating solids or liquids.
5) Adding absorbent.
6) Size reduction [e.g., cutting (jaws, saws, torches)], bending, folding, crushing (e.g., drum crusher), shredding, compacting, or similar methods that do not have a higher extent of disruption].
7) Void filling.
8) Pressure relief/release (e.g., aerosol cans, gas cylinders, drums, or other similar containers).
9) Aerosol can/drum puncturing.

B) Verification Activities - Verification support activities are provided for waste and other materials that are generated on or off the Hanford Site. Verification activities are:
1) Physical observation.

2) Nondestructive examination (NDE).
3) Nondestructive assay (NDA).
4) Chemical field screening.
5) Radiological surveys.
6) Radiological samples.
7) Headspace gas analysis.
8) Chemical sampling.

C) Sampling Activities - Sampling of waste generated by operations or by other onsite or offsite generators is performed. The purpose of sampling is to confirm process knowledge, characterize waste, support verification, and determine land disposal requirements as applicable. Sampling activities are:
1) Field screening [e.g., Ph paper, oxidizer, volatile organic analyses (VOAs), polychlorinated biphenyls (PCBs), or similar screening parameters].
2) Obtaining a sample for analysis [e.g., grab, composite, composite liquid waste sampler (COLIWASA), or other similar sampling techniques].
3) Shipping/transferring the samples to an approved laboratory for analysis.
4) Disposition of sample returns (e.g., placement back into the parent container or another approved container/tank).
5) Headspace gas analysis [typically in support of the Waste Isolation Pilot Plant (WIPP) Project].
6) Tank sampling (liquid, sludge, salt cake, composites).

D) Decontamination/Refurbishment Activities - Materials, equipment, and waste can be decontaminated (e.g., free release, reduce the radiological levels, or other similar criteria) using a variety of methods. T-Plant also performs decontamination of T- Plant structural components (e.g., 221-T Building walls, cells, or other similar surfaces). Decontamination activities at T-Plant are:
1) Water (fog, high or low-pressure spraying).
2) Steam.
3) Ice blasting.
4) Vacuum blasting.
5) Brushing.
6) Abrasive tools.
7) Scraping.
8) Washing (e.g., chemicals/detergents).
9) Immersion.
10) Electro-polishing.
11) Cutting (e.g., removal by sawing, torch cutting more highly radioactive components or other similar methods).
12) Rust/paint removal.

E) Maintenance Activities - A variety of preventative and/or repair maintenance activities are performed at T-Plant. Some maintenance activities involve the temporary shut down of the 291-T-1 exhaust stack. Maintenance activities are:
1) Painting.
2) Crane maintenance.
3) Electronic systems functional checks and repairs [CAMs, personnel contamination monitors (PCMs)].
4) Calibrations.
And may be performed on:
5) Rollup doors.
6) Heat pumps.
7) Exhaust fans.
8) Transformers.
9) Scale systems.
10) Wire rope.
11) Stack systems fan lubes.
12) Forklifts.

F) Waste Treatment Activities - T-Plant is a treatment facility permitted by the Washington State Department of Ecology (Ecology). Treatment activities are:

1) Macro encapsulation.
2) Absorption.
3) Neutralization.
4) Immobilization.
5) Encapsulation.
6) Stabilization (solidification, cementation, grouting).
7) Compaction.
8) Amalgamation.
9) Segregation.
10) Shredding.
11) Venting.
12) Size Reduction.

G) Recycling Activities - Materials are recycled whenever possible. Recycled materials are collected in accumulation containers in approved locations and transferred to the Recycling Center. Only nonradioactive materials are sent to the Recycling Center. Some radioactive materials (ferrous and nonferrous metals) can be recycled. Recycled materials are: ferrous and non-ferrous metal, light bulbs, aerosol cans, oils, and batteries.

H) Storage Activities - T-Plant is permitted for waste storage by Ecology. Plant also stores other materials (chemicals, or equipment, or similar materials) to support operations. Radioactive wastes may be stored uncontainerized or in:
1) Containers (boxes, drums, tanker trucks/railcars, or large diameter containers).
2) Tanks.
3) Sumps and pipes.

I) Equipment, Materials, and Waste Movement Activities - The movement of materials, equipment, waste, chemicals, or similar items involves the receipt and/or transferring/shipping, and movement and/or relocation within the T-Plant TSD unit boundary. Movement activities (using a forklift, crane, truck, dolly, personnel) are:
1) Receiving waste (liquid, solid, semi-solid) for storage and/or treatment.
2) Movement of waste (liquid, solid, semi-solid) and equipment in or out of process cells, canyon deck crane way, or tunnel in the 221-T Building.
3) Movement of liquids, sludges, or other waste from containers and/or tanks via transfer lines.
4) Waste container transfers (among outdoor storage pads, within buildings, process cells, canyon deck, or other approved locations).
5) Placing and storing chemical products in flammable cabinets or other approved storage locations.
6) Trans loading from the 221-T tunnel to canyon deck and/or process cells.

J) Housekeeping Activities - Housekeeping activities involve maintaining T-Plant in a clean and orderly condition. Housekeeping activities are:
1) Sweeping (brooms).
2) Mopping (squeegees or mops).
3) Vacuuming.
4) Dusting.
5) Wiping (sponges, towels).
6) Picking up debris.
7) Removal of trash.

K) Surveillance Activities - Surveillance activities involve walking down and inspecting various areas, systems, and components. Surveillances typically consist of daily, weekly, and monthly inspections of waste containers, tanks, buildings, or similar locations. Surveillances are subject to change (adding, deleting and/or modifying) as operations, maintenance, engineering, and radiological control dictates. Surveillances, inspections, and maintenance activities that do not have the potential to create airborne contamination can occur within the 221-T Building when the 291-T-1 exhaust stack emission system is shutdown. The following surveillances are performed at T-Plant:
1) Container storage areas treatment and storage tanks and ancillary equipment.
2) General condition of building structures.
3) Safety Cold weather surveillances (typically, between October 1 and March 31).

4) Inspection of equipment.
5) Inspection of HEPA filtered vacuums.
6) Radiological surveys.

L) Contamination Within the Canyon - The operational activities described inherently involve the spread of contamination within the canyon. The canyon is designed to provide containment for these operational activities. Job specific contamination controls are used (spreading paper to facilitate easy decontamination, fogging, fixing contamination, covering, performing operations remotely or other similar methods that cover, seal, or remove smearable contamination).

8) ABATED and UNABATED EMISSIONS

The abated and unabated emissions for this license have been estimated using particulate 241-Am, 239/240-Pu, 137-Cs, and 90-Sr, based on the isotopic distribution measured in destructive analysis of a T-Plant pre-filter, a Dose Equivalent-Curie limit of 15,000 DE-Ci, and also include a small contribution from gaseous radionuclides that may be encountered. The amounts of radioactive gases included are: (3-H, 25 Ci), (85-Kr, 3000 Ci), (129-I, 0.05 Ci), (219-Rn, 0.2 Ci), (220-Rn, 30 Ci), (222-Rn, 2 Ci). Radionuclides that may be encountered as particulates are: 242-Cm, 243-Am, 244-Cm, 60-Co, 134-Cs, 154-Eu, 40-K, 94-Nb, 237-Np, 238-Pu, 241-Pu, 242-Pu, 244-Pu, 226-Ra, 106-Ru, 125-Sb, 228-Th, 234-Th, 232-U, 233-U, 234-U, 235-U, 236-U, 238-U. Other particulate radionuclides are permitted, the total to remain within the DE-Ci limit of 15,000 DE-Ci and the abated emission limit of the license. Gaseous radionuclides are permitted, the sum of doses from radioactive gases to remain less than 6% of the total abated emission limit for this license.

This condition does not apply to naturally occurring Radon.

9) ALTERNATIVE FLOW MEASUREMENT METHOD

The alternative flow measurement method proposed for the 291-T-1 stack by USDOE letter 03-RCA-0210, dated April 9, 2003, is approved for use (WAC 246-247-075(3)).

10) ANNUAL INSPECTION and MAINTENANCE of HEPAs

The annual inspection and maintenance of the HEPAs must include visual inspection of the filter housing. Documentation of these activities must be made available to WDOH upon request.

11) EMISSION UNIT MONITORING SYSTEM ACTIVITIES

The emission unit monitoring system shall have the following activities performed:
A) By December 31, 2005 and annually thereafter:
1) A visual check of nozzle position and orientation as well as measurements of nozzle openings;
2) Checks to ensure the tightness of all fittings and connections as well as a leak test of the entire sampling system.
3) Visual inspections for corrosion, physical damage, or dust loading of the probe, sample lines, and monitoring system equipment.
B) Annually, from December 31, 2003:
1) A functional/calibration check of monitoring system instrumentation shall be performed.
2) USDOE shall provide to WDOH for review copies of the procedures used to perform the above activities.

12) PTE- T-PLANT TRACKED DE CURIES

The PTE at T-Plant shall be tracked in DE curies. A running total of DE curies present at the beginning of the calendar year plus DE curies introduced into T-Plant during that year shall be maintained and kept available for WDOH review. This record shall be made current at no greater than weekly intervals. That the total does not exceed license limits shall be routinely verified, and documentation of that verification shall be maintained.

13) QUALITY ASSURENCE STANDARDS for SAMPLING of EMISSIONS

The Quality Assurance Standards for the sampling of emissions and subsequent analysis must remain in compliance with HNF-0528 NESHAPS Quality Assurance Project Plan for Radioactive Airborne (all of sections 2.0, 3.0, 5.0).

14) T-PLANT DEMONSTRATES ADEQUACY OF SYSTEM DESIGN and OPERATION

T-Plant must continue to demonstrate that the adequacy of their system design and operation is equivalent to the intent of ASME/ANSI N-510. Both stages of HEPA filtration must be individually aerosol tested in place, a minimum of annually (at a minimum control efficiency of 99.95 percent).

15) RECEIPT and STORAGE of K-BASINS SLUDGE

A. Receipt, Treatment, Storage and Load out of north load out pit (NLOP) Sludge:

1) Sludge treatment consists of mixing the sludge with grout via the following major process steps:
a) Transferring sludge from Large Diameter Container into the grout system.
b) Sampling to ensure grouted containers meet waste isolation project plant (WIPP) acceptance requirements.
c) Transferring aliquots into WIPP certified 55 gallon drums.
d) Grouting to meet WIPP waste acceptance criteria.

2) Prior to treatment, NLOP sludge shall be stored in T-Plant process cells 3L, 10L, 13L, 15L, 8R, 9L, 14R, and/or 16R.

3) Containerized and grouted sludge shall be stored for not longer than 23 years from the date of issue of this license within the T-Plant complex.

4) Containerized and grouted sludge shall be stored within the TSD unit boundary, and disposed according to assay of individual containers.

5) The potential-to-emit of NLOP sludge received at T-Plant shall not exceed 0.9 mrem/year, corresponding to 120 DE Ci.

B. Receipt and Storage of K-Basins Sludge:

1) Preparation of cells to receive sludge containers, which shall be limited to the following activities:
a) Intrusive cell operations to relocate items within cells and to transfer items between cells.
b) Removal of cell contents, which shall be limited to the following operations.
b1) Remote crane operations using lifting bails and clamshells.
b2) Pumping of liquids.
b3) Vacuum suction.
b4) Storage, repackaging, and treatment of containerized and uncontainerized radioactive waste.
b5) Waste characterization, verification, repackaging, size reduction, segregation, immobilization, and consolidation.
b6) Preparation of waste shipments in accordance with acceptance criteria for other facilities.
b7) Treatment and storage of liquid mixed waste.
c) Storage of contaminated process equipment and debris in the 221-T Canyon Building cells and deck shall be limited to:
c1) Tanks, pulsers, precipitators, centrifuges, and jumpers/connectors.
c2) Decontamination equipment, immersion tanks, sprayers, and blasters.
c3) Equipment racks, pumps, mixers, and motors.
c4) Original equipment (prior to decontamination mission).
c5) Condensers, chillers, filter assemblies, and columns.
c6) Open and closed boxes, drums, and containers, filled with debris.
c7) Tools, concrete blocks, and loose debris.
d) Refurbishing, recycling, and maintenance of contaminated equipment shall be limited to the items of equipment listed above.
e) Decontamination of equipment and materials, which shall be limited to the following operations:
e1) Hand, spray, and abrasive methods.
e2) Steam cleaning.
e3) High pressure hot water.
e4) High pressure cold water
e5) Ice blasting.
e6) Abrasive tools.
2) The chemical and physical processes associated with the sludge storage shall consist of the following:
a) Radioactive waste shall be managed in accordance with written facility and Hanford Site waste management procedures and acceptance criteria. Criteria for moving containers from the canyon into the tunnel include the requirements that smearable contamination on the outside of the container must be less than 400 dpm/100 cm2 alpha and less than 20,000 dpm/100 cm2 beta/gamma for low risk evolutions. For medium risk evolutions the criteria for moving containers from the canyon into the tunnel shall include the requirements that smearable contamination on the outside of the container must be less than 2,000 dpm/100 cm2 alpha and less than 100,000 dpm/100 cm2 beta/gamma.

b) New liner systems shall be installed in the pool if storage under water is required and in four to twelve of the process cells. Existing water conditioning systems (coolers, filtration system, ion exchange columns, and piping) shall be used, modified, replaced or removed if storage under water is required.

c) Spent nuclear fuel (SNF) sludge retrieved from the 105-KE and 105-KW Basins shall be managed as two separate waste streams. Sludge containers configured for dry storage shall be used for less reactive floor and pit sludge components, including windblown sand and rocks, spalled concrete from the basin walls, iron and aluminum corrosion products, ion exchange resin beads, uranium oxides, and uranium fuel particles. More reactive sludge collected in the knockout pots and settler tank during SNF retrieval and processing at K-Basins shall be stored in a container configured for storage under water or for dry storage if allowed by criticality and thermal analyses.

d) Physical upgrades to the 221-T Canyon, as determined in final design, shall include installation of new cell containment, liner bracing systems, sump pumps, leak detectors, and instrumentation and controls in the 221-T Canyon.

e) Canyon radiation detectors, alarms, and cameras will be upgraded to provide surveillance.

f) Sludge containers shall be designed to ensure a safe storage configuration, based on final design results determined in criticality and heat rejection requirements analysis. Final design shall analyze maximum sludge loading and container sizing to minimize the number of transfers and number of containers.

g) Contents of filled sludge containers shall consist of a layer of sludge below a layer of water and a layer of air to provide a void space in each container. Sludge containers shall be capable of maintaining sludge in a wet state during transport and storage.

h) Sludge containers shall be received and placed into interim storage in the 221-T Canyon, configured for dry cell storage or storage under water. All sludge container handling and placement within the 221-T Building shall be performed remotely via crane operations.

i) The containers shall be transported from K- Basins to the 221-T Building via tractor and trailer. Each transfer shall consist of one transport cask which shall be inspected upon receipt according to approved receipt methods.

j) Sludge container unloading operations shall be done remotely using the canyon crane system. T-Plant Complex personnel shall vent and purge the transport cask with non-radioactive inert gas within the controlled airspace. The purge/venting system shall include a radiation detection method to verify that the storage container does not leak during transport and shall purge all hydrogen from the transport cask.

k) As a sludge container is moved from the tunnel into the canyon, operations personnel shall verify remotely the identification number and record the container number, via existing camera systems. After the container is removed from the cask, an empty container will be placed in the cask and the lid shall be replaced. The transport system shall be surveyed for possible contamination on exiting the Radiological Area and will return to K- Basins.

l) After the sludge containers are placed in the 221-T Canyon interim dry storage location, surveillance shall be performed to ensure that safety, regulatory, and safeguards and security requirements are met. Water levels within the dry storage containers shall be monitored (weight differential), and water additions shall be made remotely.

m) After sludge containers are placed in the interim underwater pool storage location, surveillance shall be performed to ensure that safety, regulatory, and safeguards and security requirements are met. Pool storage conditions (water quality, water temperature, water level, and ion exchange column status) shall be monitored, and water shall be added as needed to the pool to maintain the necessary water depth.

Emission Unit ID: 315

200W P-296T007-001

296-T-7

This is a MINOR, ACTIVELY ventilated emission unit.

T- PLANT COMPLEX

Emission Unit Information

Stack Height: 28.00 ft. 8.53 m. Stack Diameter 2.30 ft. 0.70 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 81.00 ft/second. 24.69 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	1	
	HEPA	1	
	Fan	1	To operate per Conditions and Limitations of the license.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(c)(4)(e) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	See special conditions.

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the 2706-T Facility involve waste management operations in support of decontamination and decomissioning operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of 2706-T Building (Replaces NOC 920)	AIR 17-115	1/24/2017	1033

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 7.50E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted. The approved activities are limited to:

A) PACKAGING AND REPACKAGING WASTE

Packaging and repackaging activities are performed for waste generated at 2706-T as well as for onsite and offsite generators. The repackaging of waste supports waste acceptance criteria for other Treatment Storage and Disposal (TSD) facilities. For example, prohibited items from waste packages are removed and either staged for later handling or repackaging using remote or manual methods.

Packaging and repackaging activities are:

a) Sorting.
b) Segregation.

c) Removing prohibited items.
d) Compositing/aggregating solids or liquids.
e) Adding absorbent.
f) Size reduction [e.g., cutting (jaws, saws, torches)], bending, folding, crushing (e.g., drum crusher), shredding, compacting, or similar methods that do not have a higher extent of disruption].
g) Void filling.
h) Pressure relief/release (e.g., aerosol cans, gas cylinders, drums, or other similar containers).

B) VERIFICATION ACTIVITIES

Verification support activities are provided for waste and other materials that are generated on or off the Hanford Site.

Verification activities are:

a) Physical observation.
b) Nondestructive examination (NDE).
c) Nondestructive assay (NDA).
d) Chemical field screening.
e) Radiological surveys.
f) Radiological samples.
g) Headspace gas sampling.
h) Chemical sampling.

C) SAMPLING ACTIVITIES

Sampling of waste generated by operations or by other onsite or offsite generators is performed. The purpose of sampling is to confirm process knowledge, characterize waste, support verification, and determine land disposal requirements as applicable.

Sampling activities are:

a) Field screening [e.g., pH paper, oxidizer, volatile organic analyses (VOAs), polychlorinated biphenyls (PCBs), or similar screening parameters].
b) Obtaining a sample for analysis [e.g., grab, composite, composite liquid waste sampler (COLIWASA), or other similar sampling techniques].
c) Shipping/transferring the samples to an approved laboratory for analysis.
d) Disposition of sample returns (e.g., placement back into the parent container or another approved container/tank).
e) Headspace gas analysis [typically in support of the Waste Isolation Pilot Plant (WIPP) Project].

D) DECONTAMINATION/REFURBISHMENT ACTIVITIES

Materials, equipment, and waste can be decontaminated (e.g., free release, reduce the radiological levels, or other similar criteria) using a variety of methods. Equipment can also be repaired and refurbished within the 2706-T facility. Within 2706-T, decontamination of 2706-T structural components may be performed.

Decontamination and refurbishment activities at 2706-T are:

a) Vacuum blasting.
b) Brushing.
c) Abrasive tools.
d) Scraping.
e) Washing (e.g., chemicals/detergents).
f) Immersion.
g) Electro-polishing.
h) Cutting (e.g., removal by sawing, torch cutting more highly radioactive components or other similar

methods).
i) Rust/paint removal.
j) Sand blasting.
k) Vacuuming.

E) MAINTENANCE ACTIVITIES

A variety of preventative and/or repair maintenance activities are performed at 2706-T. Some maintenance activities involve the temporary shut down of the 296-T-7 exhaust stack.

Maintenance activities are:

a) Painting.
b) Crane maintenance.
c) Electronic systems functional checks and repairs [CAMs, personnel contamination monitors (PCMs)].
d) Calibrations.
e) Mechanical overhaul and rebuild.
f) Bearing replacement.
g) Pump and motor alignment.

Maintenance may be performed on:
a) Rollup doors.
b) Heat pumps.
c) Exhaust fans.
d) Transformers.
e) Scale systems.
f) Wire rope.
g) Stack systems.
h) Forklifts.

F) WASTE TREATMENT ACTIVITIES

2706-T is a Resource Conservation and Recovery Act (RCRA) treatment and Storage facility permitted by the Washington State Department of Ecology (Ecology).

Treatment activities are:

a) Macroencapsulation.
b) Absorption.
c) Neutralization.
d) Immobilization.
e) Encapsulation.
f) Stabilization (solidification, cementation, grouting).
g) Compaction.
h) Amalgamation.
i) Segregation.
j) Shredding.
k) Venting and drilling.
l) Size Reduction.

G) RECYCLING ACTIVITIES

Materials are recycled whenever possible. Recycled materials are: ferrous and non-ferrous metal, light bulbs, aerosol cans, oils, and batteries.

H) STORAGE ACTIVITIES

2706-T stores materials (chemicals, or equipment, or similar materials) to support operations. Radioactive wastes may be stored uncontainerized or in:
a) Containers (boxes, drums, tanker trucks/railcars, or large diameter containers).
b) Tanks.
c) Sumps and pipes.

I) EQUIPMENT, MATERIALS, AND WASTE MOVEMENT ACTIVITIES

The movement of materials, equipment and waste is necessary to support operations and maintenance. Movement activities (using a forklift, crane, truck, dolly, personnel) are:
a) Receiving waste (liquid, solid, semi-solid) for storage and/or treatment.
b) Movement of waste (liquid, solid, semi-solid) and equipment.
c) Movement of liquids, sludges, or other waste from containers and/or tanks via transfer lines.
d) Waste container transfers.
e) Placing and storing chemical products in flammable cabinets or other approved storage locations.
f) Movement of contaminated material.

J) HOUSEKEEPING ACTIVITIES

Housekeeping activities involve maintaining 2706-T in a clean and orderly condition.

Housekeeping activities are:

a) Sweeping (brooms).
b) Mopping (squeegees or mops).
c) Vacuuming.
d) Dusting.
e) Wiping (sponges, towels).
f) Picking up debris.
g) Removal of trash.

K) SURVEILLANCE ACTIVITIES

Surveillance activities involve walking down and inspecting various areas, systems, and components. Surveillances typically consist of daily, weekly, and monthly inspections of waste containers, tanks, buildings, or similar locations. Surveillances are subject to change (adding, deleting and/or modifying) as operations, maintenance, engineering, and radiological control dictates. Surveillances, inspections, and maintenance activities that do not have the potential to create airborne contamination can occur within the 2706-T Building when the 296-T-7 exhaust stack emission system is shutdown.

The following surveillances are performed at 2706-T:

a) Container storage areas treatment and storage tanks and ancillary equipment.
b) General condition of building structures.
c) Cold weather surveillances (typically, between October 1 and March 31).
d) Inspection of equipment.
e) Inspection of HEPA filtered vacuums.
F) Radiological surveys.

2706-T: The 2706-T facility includes the 2706-T building and the 2706-TA Building. The 2706-T Building and the 2706-TA Building make up a single structure and are described briefly here. The 2706-T facility handles low-level waste, mixed low level waste, and transuranic (TRU) waste.

The 2706-T Building was built in 1959 as a low-level radiological decontamination building. The original building was 66 feet long and 50 ft wide. The 2706-TA Building was added in 1994/1995 over the concrete pad on the west side of the 2706-T. One rollup-door and one man-door provide access between 2706-T and

2706-TA Building. Three heat pumps provide heating, ventilation, and air conditioning for the 2706-T Building operations area. Waste handling and decontamination operational areas of the 2706-T Building are open and unobstructed. The 2706-T building is a pre-engineered metal building. The foundation is concrete slab on grade throughout. The 2706-T Building includes two pits, one for decontamination and treatment of motor vehicles and other large equipment, and one for rail car decontamination and treatment. These pits can also be used to support collection of liquids from waste handling activities.

CURRENT OPERATIONS IN 2706-T BUILDING

Include waste sampling, packaging and repackaging, head-gas sampling, managing waste containers, decontamination/refurbishment, maintenance, recycling, storage, housekeeping, surveillance, and movement activities. One egress door leads directly to the exterior of 2706-T Building. Other doors lead directly to the non-ventilated lean-to on the north side, and an air lock provides access to the 2706-TA Building operations area. The railway and auto pits have metal grating and some wooden covers to prevent falls into the pits. An epoxy floor sealant had been applied to all operational area floors. To support these operations, greenhouses are used as necessary in 2706-T. Greenhouses are temporary or semi-permanent radioactive material confinement structures, and can be used for contamination control. If used, greenhouses shall exhaust to the areas ventilated by the 296-T-7 ventilation system.

The atmosphere clean-up train (ACT-1) system, sprinkler system riser room, and electrical room are located in the south lean-to (non-ventilated).

2706-TA: The 2706-TA Building is an addition to the 2706-T Building installed in the 1990s as an add-on over the concrete storage pad located west of the building. The 2706-TA Building is approximately 54 feet long, 45 ft wide, and 23 feet high. There are two rollup doors located at the west end of the building. The 2706-TA Building has steel primary and secondary structural elements and corrugated sheet metal exterior siding and roofing panels. Three heat pumps provide heating, ventilation, and air conditioning for the 2706-TA Building operations area. The floor is concrete slab on grade. An epoxy floor sealant had been applied to all operational area floors. Waste handling and decontamination operational areas of the 2706-TA Building are open and unobstructed.

CURRENT OPERATION IN 2706-TA BUILDING

Include waste sampling, packaging and repackaging, head-gas sampling, managing waste containers, decontamination/refurbishment, maintenance, recycling, storage, housekeeping, surveillance, and movement activities. To support waste activities, greenhouses are used if necessary. Greenhouses are temporary or semi-permanent radioactive material confinement structures, and can be used for contamination control. When used, greenhouses shall exhaust to the areas ventilated by the 296-T-7 ventilation system.

Attached to the south side of 2706-TA Building is a lean-to made up of two rooms. The larger room houses the new ACT-2 HEPA filter system, which serves the operational areas. The ACT-1 and ACT-2 systems exhaust through the 296-T-7 stack. The second room houses electronic controllers and electrical switchgear supporting operations.

Emissions from these activities are exhausted through 296-T-7, except for emissions resulting from vented TRU containers stored within the facility, which may be released to the 200 Area diffuse and fugitive emission unit when the ventilation system is not in operation.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 7.50E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

DE - 0	1.90E-05	Contained	WAC 246-247-030(21)(a)

Any radionuclide on the chart of the nuclides could be encountered. A small contr bution from the gaseous radionuclides may be encountered. The radionuclides within the facility are controlled by the licensee in terms of dose-equivalent (DE) Curies. A conservative PTE tracking method for the demonstration of compliance to the licensed PTE limits is provided in the conditions of the license. "Contained" means "within typical TRU waste containers for which a release fraction of 2E-09 has been determined to be appropriate."

DE - 0	2.90E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Any radionuclide on the chart of the nuclides could be encountered. A small contr bution from the gaseous radionuclides may be encountered. The radionuclides within the facility are known to and controlled by the licensee in terms of dose-equivalent (DE) Curies. A conservative PTE tracking method for the demonstration of compliance to the licensed PTE limits is provided in the conditions of the license. This amount of DE curies is permitted within the facility uncontained in TRU waste containers as liquid/particulate for which a release fraction of 1E-03 is appropriate.

H - 3	1.50E+01	Gas	WAC 246-247-030(21)(a)
Rn - 219	2.00E-01	Gas	WAC 246-247-030(21)(a)
Rn - 220	2.80E+01	Gas	WAC 246-247-030(21)(a)
Rn - 222	1.47E+00	Gas	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

H - 3 Rn - 219 Rn - 220 Rn - 222

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) USE OF AS LOW AS REASONALBE ATAINABLE PRINCIPLE

All activities involving potentially airborne radioactive materials in 2706-T shall be conducted in accordance with the ALARA principle.

5) PTE TRACKING IN AIR SPACE VENTILATED BY 296-T-7

The PTE in the space ventilated by 296-T-7 shall be tracked for compliance to the license limit as described in this condition.

Waste Contained in Typical TRU Waste Containers: PTE < 9490 DE Ci/year * 2E-09. Compliance: maintain annual total of DE Ci * 2E-09 below limit. [Dose contribution of this activity to license limit estimated assuming each DE Ci is 241-Am].

Venting of Waste Uncontained in Typical TRU waste Containers: PTE < 9490 DE Ci/year * 1E-03 * 5.7E-05. Compliance: maintain annual total of DE Ci * 1E-03 * 5.7E-05 vented below limit. [Dose contribution of this activity to license limit estimated assuming each DE Ci is 241-Am].

Torch cutting: PTE< 9E-04 mrem/year. Compliance: Maintain the product of inches cut and contamination level to: < 8.8 E+09 in-dpm/100 sq.cm beta/gamma and < 8.8E+6 dpm/100 sq.cm alpha.
(Note: The release at the cut is assumed gaseous due to high cutting temperature, but it is also assumed that any gases thus formed will recondense into a particulate form by the time they reach the filters, and be subject to the standard removal efficiency of the HEPA filter.) [Dose contribution of this activity to license limit estimated assuming all alpha is 241-Am, all beta/gamma is 137-Cs.]

Gases in Waste Contained in Typical TRU Waste Containers: PTE < 7E-04 mrem/year. Compliance - maintain: tritium PTE below 15 Ci/yr; 219-Rn PTE below 0.2 Ci/yr; 220-Rn PTE below 28 Ci/yr; 222-Rn PTE below 1.47 Ci/year. These limits apply to process-enhanced radionuclides only, per (WAC 246-247-020(4)). [Dose contribution of this activity to license limit estimated using isotope-specific dose conversions factors.]

Other Processes: PTE < 4.9 E-02 mrem/year. Compliance: maintain total facility DE Ci/year (exclusive of TRU

included above) * 1E-03 below 2.9 * 1E-03, or maintain the sum Ci(alpha) * 1E-03 * 17 + Ci(beta/gamma) * 1E-03 * 0.31 below 4.9 E-02 mrem/year. [Dose contribution of this activity's PTE to license limit estimated assuming DE Curies are 241-Am].

Residual Contamination: PTE < 7.1E-03 mrem/year. Accounts for residual contamination present in facility if posting is Contamination Area or below. Greater contamination levels result from other processes, and are accounted for in the PTE(s) associated with them. No specific compliance demonstration is necessary beyond the compliance with posting requirements. [Dose contribution of this activity to license limit estimated assuming all alpha is 241-Am, all beta/gamma is 137-Cs.]

The facility shall document and implement a program of inspection and maintenance to ensure the continuous integrity of contamination fixative used within the facility.

That the total PTE does not exceed licensed limits shall be routinely verified, and documentation of that verification shall be maintained.

6) CONDITIONS REQUIRING OPERATION OF VENTILATION SYSTEM

The ventilation system shall be in operation when activities involving radioactive or contaminated materials are performed within the ventilated space. The ventilation system shall be in operation if any part of the 2706-T Facility is posted as a high contamination area, or higher. Storage/movement of ventilated (NucFil or vent clip) TRU containers is permitted when the ventilation system is not operating.

7) CONDITIONS REQUIRING CONTINUOUS RECORD SAMPLING

Record sampling shall be continuous whenever the ventilation system is operating. Samples shall be collected monthly, for periods in which the ventilation system has operated. Samples shall be composited and analyzed quarterly, if a sample was collected during that quarter. Licensee shall document minimum detectable concentrations for the stack emissions measurements. (WAC 246-247-075 (3, 8, 9))

8) CLOSURE OF ACCESS DOORS

All roll up doors providing access to the interior of the 2706-T and/or 2706-TA buildings from the ambient atmosphere shall remain closed whenever the ventilation system is in operation as required by condition 6.

9) ALPHA/BETA MDAs and MDCs REQUIRED FOR ANALYTICAL LABORATORIES

The following alpha/beta MDA and MDC limits shall be used by the analytical laboratory when analyzing the samples collected.

The Nominal Sample Volume for a single sample filter of 20,000 ft^3 (5.7E+08 mL)

Gross Alpha (c	MDA (a) 5.0E-06 µCi	MDC (b) 8.8E-15 µCi/mL
Gross Beta (c	MDA (a) 1.0E-05 µCi	MDC (b) 1.8E-14 µCi/mL
Silver (ag) zeolite (d)	MDA (a) 1.9E-05 µCi (as Ru-106)	MDC (b) 3.4E-14 µCi/mL (as Ru-106)

The Nominal Sample Volume for a quarterly composite sample of 262,000 ft^3 (7.4E+09 mL)

Sr-90	MDA (a) 1.4E-05 µCi	MDC (b) 1.9E-15 µCi/mL
Gamma Energy Analysis (e	MDA (a) 1.4E-05 µCi (as Cs-137)	MDC (b) 1.9E-15 µCi/mL (as Cs-137)
Isotopic Pu (i.e. Pu-238, Pu-239/240)	MDA (a) 1.5E-06 µCi	MDC (b) 2.0E-16 µCi/mL
Pu-241	MDA (a) 7.4E-05 µCi	MDC (b) 1.0E-14 µCi/mL
Am-241	MDA (a) 1.4E-06 µCi	MDC (b) 1.9E-16 µCi/mL

MDA = minimum detectable activity; MDC = minimum detectable concentration.

(a) Actual MDAs derived from sample analyses shall be as low as reasonably achievable and shall not exceed the values specified in Table 1 provided the sample meets or exceeds its respective nominal volume. The target MDAs in Table 1 are derived from multiplying the MDCs in Table 1 by the respective nominal sample volumes shown in the table.

(b) Actual MDCs derived from sample analysis shall be as low as reasonably attainable and shall not exceed the values specified in the Table 1 provided the sample meets or exceeds its respective nominal volume. The target MDCs in Table 1 are 10% of the concentration values in Table 2 of 40 CFR 61, Appendix E.

(c GAB emission data are often used in dose calculations to substitute for the presumed presence of the usually most prevalent alpha- and beta-emitting radionuclides having the highest dose factors, which, depending on facility source term, for alpha-emitters has mostly usually been Pu-239/240, but occasionally Am-241, and for beta-emitters, Sr-90, but occasionally Cs-137.

(d) Silver zeolite analysis shall be designed to primarily identify I-129.

(e All positive gamma-energy analysis (GEA) results shall be reported, with the exception of short lived progeny of Rn-222 and Rn-220. At a minimum, GEA shall be designed to identify peaks of Co-60, Ru-106, Sb-125, Cs-134, Cs-137, Eu-152, Eu-154, Eu-155, and Pa-231.

Emission Unit ID: 332

200W P-291S001-001

291-S-1

This is a MINOR, ACTIVELY ventilated emission unit.

S PLANT (REDOX)

Emission Unit Information

Stack Height: 200.00 ft. 60.96 m. Stack Diameter 6.50 ft. 1.98 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 33.10 ft/second. 10.09 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Sandfilter	1	
	Fan	2	In parallel, only 1 operates at a time

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the 202-S Facility involve surveillance and maintenance at the Hanford Site.

Emission Unit ID: 337

200W P-296S016-001

296-S-16

This is a MINOR, ACTIVELY ventilated emission unit.

219-S Building

Emission Unit Information

Stack Height: 12.50 ft. 3.81 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 29.41 ft/second. 8.96 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a waste handling building/facility exhauster that is used to ventilate building and facility operations such as but not limited to liquid waste tanks that support tank farm waste characterization activities, research and development, environmental sample analysis, and Hanford operation and remediation projects. This emission unit operates continuously.

Emission Unit ID: 340

200E P-296B010-001

296-B-10, WESF

This is a MAJOR, ACTIVELY ventilated emission unit.

Waste Encapsulation and Storage Facility (WESF)

Emission Unit Information

Stack Height: 75.00 ft. 22.86 m. Stack Diameter 3.50 ft. 1.07 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 42.20 ft/second. 12.86 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
K-1 Filter Bldg.	Prefilter	2	In series
K-1 Filter Bldg.	HEPA	2	In series
K-1 Filter Bldg.	Fan	1	2 in parallel operated, one fan at a time and one in backup mode
K3N Ventilation Skid	Demister	1	
K3N Ventilation Skid	Heater	1	
K3N Ventilation Skid	Prefilter	1	
K3N Ventilation Skid	HEPA	2	In-series
K3N Ventilation Skid	Fan	1	2 parallel paths (1 in-use, 1 backup)

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 60, Appendix A, Method 2; 40 CFR 61, Appendix B, Method 114; 61.93(b)(2)(ii) ANSI N13.1	Each radionuclide that could contribute greater than 10% of the potential TEDE to the MEI, greater than 0.1 mrem/yr PTE TEDE to the MEI, and greater than 25% of the TEDE to the MEI, after controls.	Particulates shall be continuously sampled and analyzed every two weeks for gross alpha and gross beta/gamma, composited quarterly, and analyzed isotopically.

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for WESF involve surveillance, maintenance and storage of radioactive capsules on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Waste Encapsulation and Storage Facility (WESF) Ventilation Upgrade	AIR 16-301	2/22/2016	981

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.92E-06 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The K1 abatement system ventilates the pool cells, truck port, service gallery, hot manipulator shop and

operating gallery portion of the WESF facility. The K3 abatement system will ventilate the Hot Cells A through G, the Canyon, and Tank TK-100 up to the start of the ventilation changeover activities. The K3N abatement system will ventilate the Canyon, Tank TK-100, Hot Cell G and Hot Cells A through F during the stabilization process. Once the stabilization activities have been completed, the K3N abatement system will ventilate the Canyon, Tank TK-100, and Hot Cell G. The paired combination of the K1 and K3 or the K1 and K3N abatement systems exhaust through a common stack that is continuously sampled when the abatement systems are in operation. The historic activities with the exception of capsule storage as detailed in previous NOCAs are no longer conducted at the WESF Facility and the new activities described below will be conducted for stabilization activities. After stabilization activities have been completed, routine operations and surveillance activities will continue for those portions of the facility associated with the storage and management of the capsules.
Continuous operations of the Waste Encapsulation and Storage Facility (WESF) consist of routine activities performed at WESF include but are not limited to:

A.Surveillances and inspections of the facility and stored material (e.g., capsule inspection).

B.Maintenance and repair activities.

C.Movement and/or transport of capsules or waste within the facility or to another licensed storage facility.

D.Continuous operation of liquid low level radioactive (LLLW) stream piping. The tank TK 100 serves as a catch tank for liquid low level radioactive waste streams originating from WESF prior to stabilization, condensate from the K-1 and K-3N filters, and the 296-B-10 stack. TK-100 is ventilated through the WESF K-3N ventilation system and out of the 296-B-10 Stack.

The contents of TK-100 are emptied by pumping the LLLW to a tanker truck at the Truck Load Out Port. In the event that additional storage capacity is needed, a new portable aboveground storage tank (nominal capacity of 4,000 gallons) will be installed at the Truck Load Out Port and vented to TK-100 during filling operations. After filling the portable aboveground storage tank, the tank will be disconnected from the Truck Load Out Port, a HEPA or NucFil filter shall be installed, and then the tank will be moved outside for storage until arrangements are made to dispose of the excess LLLW.
During normal operations the LLLW streams to TK-100 are less than 0.001 curie/liter of Sr-90 and Cs-137. In the event that the TK-100 contents are greater than or equal to 0.001 curie/liter of Sr-90 and Cs-137 during routine operations, a WESF Ion Exchange Module will be installed at the Truck Load-Out Port and the contents of TK-100 will be recirculated through the WESF Ion Exchange Module until the concentration is less than 0.001 curie/liter of Sr-90 and Cs-137. The WESF Ion Exchange Module will be vented to TK-100 during recirculation. Storage of the WESF Ion Exchange Module will normally be outdoors and will vent to atmosphere through a HEPA or NucFil filter. Use of the WESF Ion Exchange Module will continue up to a maximum loading of 20,000 curies of Sr-90 or 25,000 curies of Cs-137.
In addition, subject to additional conditions and limitations provided herein, this approval also extends to one time construction and stabilization activities associated with the W-130 WESF Stabilization Project (W-130 Project). These activities are discussed in the NOC application “Radioactive Air Emissions Notice of Construction for WESF Ventilation Upgrades,” DOE/RL 2015-15, Rev. 0, September 2015, and include but are not limited to the following:
A.Construction and demolition of WESF infrastructure necessary for the installation and tie-in of the K3N HEPA filtered abatement system. The K3 HEPA filtered abatement system is being isolated and replaced by an above ground K3N HEPA filtered abatement system to permit stabilization activities to occur.
B.Stabilization (grouting) of the K3 Filter Pit and filter housings, K3 Duct and trench, Hot Cells A through F, A Cell Airlock and the hot pipe trench.
Activities a and b may emit radioactive air through 296-B-10 common stack. Additionally, activities a through b may emit to the 200 Areas Diffuse & Fugitive emission unit.
The W-130 Project will be conducted in four (4) phases, each with different PTE values based on the work scope involved. In phase one, routine activities and pre-construction activities that do not affect the K1 and K3 abatement system will be conducted. In phase two, the K1 and K3 abatement systems will be shut down to allow for the isolation of the K3 abatement system and tie-in of the K3N abatement system to the common stack and K3 Duct. Portable HEPA filtered exhausters on the Hot Cells and temporary contamination control structures will be used as abatement controls. Routine activities will continue to be performed. During phase

three, stabilization of the K3 Filter Pit, Hot Cells, and K3 Duct will be performed in addition to routine activities. The K1 and K3N abatement systems will be operated to provide abatement control for activities performed inside WESF. Portable temporary HEPA filtered exhausted contamination control structures will be used to provide abatement control for the K3 Filter Pit stabilization and as additional ALARA based worker protection within the WESF. In phase four, the stabilization activities will have been completed. The K1 and K3N abatement systems will be used to provide abatement control for routine activities.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 2.92E-04 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Cs - 137	1.00E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Sr - 90	1.00E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Cs - 137 Sr - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) ABATEMENT TECHNOLOGY- Required Equipment
Usage of contamination control structures with HEPA filtered exhaust exterior to the WESF building is allowed during construction and stabilization activities associated with this license. WAC 246 247-060(5)

5) SAMPLING- Nondestructive Analysis/Assay (NDA)
Department of Health reserves the right to request a nondestructive analysis/assay (NDA) of the portable exhauster HEPA filter after each exhaust job assignment. WAC 246-247-075(3)

6) MONITORING- Near Facility Monitoring
The near facility monitoring network data for stations N481, N532, N976, and N973 will be trended on a monthly basis until the construction activity is completed to verify continued low diffuse and fugitive emissions from the ventilation construction activity WAC 246-247-060(5) WAC 246-247-075(8)

7) WDOH ALTERNATE APPROVAL- Alternate Flow Measurement Method
The alternative flow measurement method proposed for the 296-B-10 stack by USDOE letter 98 EAP-175, dated March 23, 1998 and NOCA DOE/RL-2015-50, is approved for use. WAC 246 247-060(5)

8) WDOH APPROVAL-Existing Probe Design
The existing probe design proposed for use at the 296-B-10 stack by USDOE letter 99-EAP-109, dated December 30, 1998 and NOCA DOE/RL-2015-50, is approved for use. WAC 246 247 060(5)

9) WDOH NOTIFICATION- Change In Potential Release Rates
The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a “modification” to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls (WAC 246-247-110(9)). DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents. WAC 246-247-060(5)

10) The K3 abatement system will ventilate the Hot Cells A through G, the Canyon, and Tank TK-100 up to the start of the ventilation changeover activities. The 296-B-10 emission unit 340 shall be operated under the current program

as a source with a PTE greater than 0.1 mrem/yr; with all applicable monitoring and quality assurance requirements as described in NOC 649. DOE shall notify WDOH upon completion of the project to relicense the activity to a minor emissions unit. WAC 246 247-060(5)

Emission Unit ID: 361

300 EP-325-01-S

EP-325-01-S

This is a MAJOR, ACTIVELY ventilated emission unit.

325 Building Radiological Processing Laboratory

Emission Unit Information

Stack Height: 89.00 ft. 27.13 m. Stack Diameter 8.00 ft. 2.44 m.

Average Stack Effluent Temperature: 77 degrees Fahrenheit. 25 degrees Celsius.

Average Stack ExhaustVelocity: 46.53 ft/second. 14.18 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	2	2 in series
	Fan	1	Variable flow (4 in parallel, up to 3 operational) Variable flow4 in parallel (1 minimum operational). The system has the capability to going down to 1 fan during set back operations.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10% of the potential TEDE	Particulates are continuously sampled and collected every two-weeks for gross alpha and gross beta analysis, and composited on a semi-annual basis and analyzed isotopically. Tritium samples are collected on a monthly basis for analysis.

Sampling Requirements Record Sample; tritium by silica gel

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This 89 foot tall stack exhausts filtered building air. Emissions were sampled using a record particulate sampler and a tritium sampler. The building contains radiochemistry laboratories and hot cells used for research process development, mixed waste treatment activities, and radioanalytical services.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Radiochemical Processing Laboratory (325 Building), Revision 3, 300 Area, Hanford Site, Richland, Washington (Replaces NOC 949)	AIR 17-314	3/30/2017	1084

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.70E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) his approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-

030(16), may be conducted.

The research and development (R&D) operations in the 325 Building involve: radiochemical process science and engineering; evaluation, analysis, and testing of radioactive, radiochemical, chemical and physical material properties; development and experimentation in the design and application of Radiation Generating Devices (RGDs); and the development and conduct of analytical procedures in support of research activities. Radiochemical work routinely conducted in the 325 Building includes the following:
•analyzing, characterizing, preparing and testing tritium and tritium-bearing materials
•characterizing, analyzing, and stabilizing sodium-bearing materials (Na and NaK)
•conducting chemical process development and rheology tests and experiments, which may include bench-scale testing, precipitation and extraction activities, material performance, and testing
•conducting non-destructive analysis evaluations of waste drums and other materials and x-ray verification and compaction of low-level waste (LLW)
•conducting nuclear material evaluations
•conducting research activities involving mixed activation products (MAPs) and mixed fission products (MFPs), and naturally occurring radioactive material, actinides, and a wide range of standard and tracer radionuclides
•conducting research and laboratory activities that may include processes where the temperature may be equal to or exceed 100oC
•conducting, testing, and implementing environmental research
•developing and preparing radioactive material standards and sources for laboratory use
•developing and testing radioactive material immobilization and stabilization processes
•evaluating and testing decontamination and decommissioning technologies
•fabricating, extracting, development, and purifying target samples
•material storage and management, including East lay-down yard and North pad
•performing actinide chemistry R&D including developing and testing plutonium and other actinide technologies
•performing characterization and research with nuclear fuel including fuel cycles, spent fuels, and reprocessing
•performing electrochemical waste processing including salt splitting, nitrate destruction, organic destruction, and electroplating
•performing property testing of irradiated materials including performance of reactor dosimetry and hydrogen and helium measurements to characterize radiation damage in materials; analyzing, fabricating, and characterizing radioactive colloids
•performing radiochemical and physical characterization of tank wastes, contaminated soils, and proposed final waste forms such as glass and ceramics, all at various stages of processing
•performing radioisotope research, process development, and separations
•preparing and analyzing samples for x-ray diffraction, electron microscopy, optical microscopy, auger analysis, and other surface techniques
•preparing standard solutions of radionuclides from stock batches for use in R&D of analytical procedures and for quality control; analyzing performance evaluation samples submitted by the U.S. Environmental Protection Agency, the Environmental Monitoring Laboratory, and other organizations as a routine part of the laboratory quality control program
•providing treatment services for hazardous waste or mixed (hazardous and radioactive) waste, which includes: grouting, neutralizing, and distilling; demonstrating new and emerging technologies for waste treatment and destruction; and developing and testing waste treatment technologies such as evaporation/concentration of radioactive solutions, or vitrification and testing of glass waste forms
•separating and processing medically usable radioisotopes; developing and testing equipment and materials for nuclear medicine
•setting up laboratory projects involving fume hood removals/upgrades and ductwork tie-in
•storing and managing samples and materials

Depending on the radioactive or hazardous nature of the work, activities in the 325 Building are divided among the two hot cell complexes and general laboratories containing glove boxes, fume hoods, and laboratory benches.

Hot cells are used for work with high-dose-rate materials when the additional shielding provided by the hot cell walls and remote handling capability provided by the manipulators are necessary for protecting workers

from unnecessary occupational exposures to radiation. Glove boxes are used to provide control and confinement of dispersible radioactive materials as necessary for the work activity. Fume hoods are used for low-level radiochemical work to primarily protect workers from chemical fumes and to provide a limited degree of confinement for radioactive materials. Work with radioactive materials on bench tops is limited to activities in which the possibility of spreading contamination is low. Individual projects frequently involve working in and transferring materials among more than one of these locations. For example, sample preparation or dilution may be performed in a hot cell or glove box, and then the sample may be moved to a laboratory fume hood for analysis.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.10E+02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Ac - 227	4.10E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
Alpha - 0	1.50E+02	Gas	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
Am - 241	5.10E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes lgreater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE to the MEI			
Am - 243	2.40E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
Beta - 0	7.90E+04	Gas	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
Cm - 244	3.00E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
Cs - 137	7.50E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
Eu - 152	1.20E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
Eu - 154	1.20E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
Gd - 153	1.80E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
H - 3	1.60E+03	Gas	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
Pu - 238	4.10E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes lgreater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE to the MEI			
Pu - 239	4.00E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes lgreater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE to the MEI			
Pu - 240	8.90E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
Pu - 241	2.60E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
Ra - 226	2.20E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
Rn - 220	2.00E+03	Gas	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
Rn - 222	1.00E+03	Gas	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 25% of the abated dose.			
Ru - 106	6.10E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
Sr - 90	1.00E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
Tc - 99	8.50E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			
U - 232	2.70E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
"Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ac - 225	Ac - 227	Ac - 228	Ag - 105	Ag - 106 m
Ag - 108 m	Ag - 108	Ag - 109 m	Ag - 110 m	Ag - 110
Ag - 111	Ag - 112	Al - 26	Al - 28	Am - 240
Am - 241	Am - 242 m	Am - 242	Am - 243	Am - 245
Am - 246	Ar - 37	Ar - 39	Ar - 41	Ar - 42
As - 74	As - 76	As - 77	At - 217	Au - 193
Au - 194	Au - 195	Au - 196	Au - 198	Au - 198 m
Au - 199	Ba - 131	Ba - 133	Ba - 133 m	Ba - 137 m
Ba - 139	Ba - 140	Ba - 141	Ba - 142	Ba - 143
Be - 10	Be - 7	Bi - 207	Bi - 208	Bi - 210 m
Bi - 210	Bi - 211	Bi - 212	Bi - 213	Bi - 214
Bk - 247	Bk - 249	Bk - 250	Br - 82	Br - 82 m
Br - 83	Br - 84	Br - 84 m	Br - 85	C - 11
C - 14	C - 15	Ca - 41	Ca - 45	Ca - 47
Cd - 107	Cd - 109	Cd - 111 m	Cd - 113 m	Cd - 113
Cd - 115 m	Cd - 115	Cd - 117	Cd - 117 m	Ce - 139
Ce - 141	Ce - 142	Ce - 143	Ce - 144	Cf - 249
Cf - 250	Cf - 251	Cf - 252	Cl - 36	Cm - 241
Cm - 242	Cm - 243	Cm - 244	Cm - 245	Cm - 246
Cm - 247	Cm - 248	Cm - 250	Co - 56	Co - 57
Co - 58	Co - 60	Co - 60 m	Cr - 49	Cr - 51
Cr - 55	Cs - 131	Cs - 132	Cs - 134	Cs - 134 m
Cs - 135	Cs - 136	Cs - 137	Cs - 138	Cs - 139
Cs - 140	Cs - 141	Cu - 64	Cu - 66	Cu - 67
Dy - 159	Dy - 165	Dy - 169	Er - 169	Er - 171
Es - 254	Eu - 150	Eu - 152	Eu - 152 m	Eu - 154
Eu - 155	Eu - 156	Eu - 157	F - 18	Fe - 55
Fe - 59	Fr - 221	Fr - 223	Ga - 67	Ga - 68
Ga - 70	Ga - 72	Gd - 148	Gd - 149	Gd - 151
Gd - 152	Gd - 153	Gd - 159	Ge - 68	Ge - 71
Ge - 71 m	Ge - 75	Ge - 77	Ge - 77 m	H - 3
Hf - 175	Hf - 178 m	Hf - 179 m	Hf - 181	Hf - 182
Hg - 203	Ho - 163	Ho - 166	Ho - 166 m	I - 122
I - 123	I - 125	I - 126	I - 128	I - 129
I - 130	I - 130 m	I - 131	I - 132	I - 132 m
I - 133	I - 133 m	I - 134	I - 134 m	I - 135
In - 106	In - 111	In - 113 m	In - 114 m	In - 114
In - 115	In - 115 m	In - 116	In - 116 m	In - 117

In - 117 m	Ir - 189	Ir - 190	Ir - 192	Ir - 194
K - 40	K - 42	Kr - 81	Kr - 81 m	Kr - 83 m
Kr - 85	Kr - 85 m	Kr - 87	Kr - 88	Kr - 89
Kr - 90	La - 137	La - 138	La - 140	La - 141
La - 142	La - 144	Lu - 177	Lu - 177 m	Mg - 27
Mg - 28	Mn - 52	Mn - 54	Mn - 56	Mo - 103
Mo - 104	Mo - 105	Mo - 93	Mo - 99	N - 13
Na - 22	Na - 24	Na - 24 m	Nb - 100	Nb - 101
Nb - 103	Nb - 91	Nb - 91 m	Nb - 92	Nb - 93 m
Nb - 94	Nb - 95	Nb - 95 m	Nb - 96	Nb - 97
Nb - 97 m	Nb - 98	Nd - 144	Nd - 147	Ni - 56
Ni - 57	Ni - 59	Ni - 63	Ni - 65	Np - 235
Np - 236	Np - 237	Np - 238	Np - 239	Np - 240
Np - 240 m	O - 15	O - 19	Os - 191	P - 32
P - 33	Pa - 231	Pa - 233	Pa - 234	Pa - 234 m
Pb - 203	Pb - 209	Pb - 210	Pb - 211	Pb - 212
Pb - 214	Pd - 103	Pd - 107	Pd - 109	Pd - 112
Pm - 143	Pm - 144	Pm - 145	Pm - 146	Pm - 147
Pm - 148 m	Pm - 148	Pm - 149	Pm - 151	Po - 208
Po - 209	Po - 210	Po - 211	Po - 212	Po - 213
Po - 214	Po - 215	Po - 216	Po - 218	Pr - 143
Pr - 144	Pr - 144 m	Pt - 191	Pt - 192	Pt - 193
Pt - 193 m	Pt - 195 m	Pt - 197 m	Pt - 197	Pt - 198
Pt - 199	Pt - 199 m	Pu - 234	Pu - 236	Pu - 237
Pu - 238	Pu - 239	Pu - 240	Pu - 241	Pu - 242
Pu - 243	Pu - 244	Pu - 246	Ra - 223	Ra - 224
Ra - 225	Ra - 226	Ra - 228	Rb - 81	Rb - 82
Rb - 83	Rb - 84	Rb - 86	Rb - 87	Rb - 88
Rb - 89	Rb - 90	Rb - 90 m	Re - 186	Re - 187
Re - 188	Rh - 101	Rh - 102	Rh - 102 m	Rh - 103 m
Rh - 104	Rh - 105	Rh - 105 m	Rh - 106	Rn - 219
Rn - 220	Rn - 222	Rn - 224	Ru - 103	Ru - 105
Ru - 106	Ru - 97	S - 35	Sb - 122	Sb - 124
Sb - 125	Sb - 126	Sb - 126 m	Sb - 127	Sb - 129
Sc - 44	Sc - 46	Sc - 47	Sc - 48	Se - 75
Se - 79	Se - 79 m	Si - 31	Si - 32	Sm - 145
Sm - 146	Sm - 147	Sm - 148	Sm - 151	Sm - 153
Sm - 157	Sn - 113	Sn - 117 m	Sn - 119 m	Sn - 121 m
Sn - 121	Sn - 123	Sn - 125	Sn - 126	Sr - 82
Sr - 85	Sr - 87 m	Sr - 89	Sr - 90	Sr - 91
Sr - 92	Ta - 179	Ta - 180	Ta - 182	Ta - 182 m

Ta - 183	Tb - 157	Tb - 158	Tb - 160	Tb - 161
Tc - 101	Tc - 103	Tc - 106	Tc - 95 m	Tc - 95
Tc - 97	Tc - 97 m	Tc - 98	Tc - 99	Tc - 99 m
Te - 121 m	Te - 121	Te - 123	Te - 123 m	Te - 125 m
Te - 127 m	Te - 127	Te - 129 m	Te - 129	Te - 131
Te - 131 m	Te - 132	Te - 133	Te - 133 m	Te - 134
Th - 227	Th - 228	Th - 229	Th - 230	Th - 231
Th - 232	Th - 233	Th - 234	Ti - 44	Ti - 45
Ti - 51	Tl - 201	Tl - 204	Tl - 206	Tl - 207
Tl - 208	Tl - 209	Tm - 168	Tm - 170	Tm - 171
U - 232	U - 233	U - 234	U - 235	U - 235 m
U - 236	U - 237	U - 238	U - 239	U - 240
V - 48	V - 49	W - 181	W - 185	W - 187
W - 188	Xe - 122	Xe - 123	Xe - 125	Xe - 127
Xe - 127 m	Xe - 129 m	Xe - 131 m	Xe - 133	Xe - 133 m
Xe - 135	Xe - 135 m	Xe - 137	Xe - 138	Xe - 139
Y - 88	Y - 90	Y - 90 m	Y - 91	Y - 91 m
Y - 92	Y - 93	Yb - 164	Yb - 169	Yb - 175
Yb - 177	Zn - 65	Zn - 69	Zn - 69 m	Zr - 100
Zr - 88	Zr - 89	Zr - 93	Zr - 95	Zr - 97
Zr - 98	Zr - 99			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) RELEASE RATE - Physical Form
Activities at the 325 building will be assessed to ensure operations that involve heating of radiological material does not result in gaseous forms of radionuclides that are not accounted for in the license. WAC 246-247-060 (5)

5) WDOH NOTIFICATION - New Radionuclide
Activities at the 325 building will be assessed to ensure that no radionuclides are handled that are not listed in this license. If any activity at the 325 building results in a new radionuclide being handled at the building a written notification will be made to the Washington Department of Health. WAC 246-247-060 (5)

6) TECHNOLOGY STANDARDS – Ductwork modifications.
Any modification resulting in an increase in the emission unit’s operating design capacity including those involving ductwork tie-in will be constructed to the ASME AG-1 standard, or equivalent. WAC-267-247-030(16) and WAC 246-247-110(18)

Emission Unit ID: 369

200E P-291A001-001

291-A-1

This is a MAJOR, ACTIVELY ventilated emission unit.

PUREX

Emission Unit Information

Stack Height: 200.00 ft. 60.96 m. Stack Diameter 7.00 ft. 2.13 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 15.50 ft/second. 4.72 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Fiberglass Filter	1	(Deep Bed Fiberglass filter)
	HEPA	2	In series
	Fan	2	In parallel, one operating, one back-up

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 60, Appendix A, Method 2; 40 CFR 61, Appendix B, Method 114 61.93(b)(2)(ii) ANSI N13.1	239/240Pu, 241Am	Particulates shall be continuously sampled and analyzed every two weeks for gross alpha and beta/gamma, composited quarterly, and analyzed isotopically

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at PUREX involve surveillance and maintenance operations at the Hanford Site.

Emission Unit ID: 385

400 P-437MN&ST-001

437-MN&ST

This is a MINOR, ACTIVELY ventilated emission unit.

437 Maintenance and Storage (MASF)

Emission Unit Information

Stack Height: 30.00 ft. 9.14 m. Stack Diameter 8.00 ft. 2.44 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 4.90 ft/second. 1.49 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Fan	2	In parallel, serves all MN&ST, intermittent use

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/ year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the MASF support K Basin sludge research and development activities.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operations of 437-MN&ST to Support K Basin Sludge Research and Development (Replaces NOC 833)	AIR 15-1103	11/10/2015	973

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.28E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The activity will involve reaction of sodium residuals associated with the Fast Flux Test Facility Project systems and equipment. This activity could be conducted in place or at designated cleaning locations. Typically, the sodium residuals would be reacted with superheated steam. The primary advantages of the superheated steam process (SSP) are that it does not allow condensation to occur and component cleaning can be performed in a shorter time period. Prior to steam injection into the system to be cleaned the steam is heated to ~ 204 C (400 F). The equipment to be cleaned is heated to a minimum of 100 C (212 F) and higher if possible. Most systems will require multiple injection points. As the superheated steam reacts with the metallic sodium, the temperature increases. The temperature is controlled such that the maximum reaction temperature is no greater than ~538 C (1,000 F).

Because of the high initial temperature and the increase of the temperature caused by the reaction, no condensation occurs. The caustic formed is a liquid at the processing temperatures and because it is denser than the liquid sodium, it settles to the bottom of any pools leaving the sodium on top where it is always exposed to the superheated steam. Due to the continued exposure of the molten sodium to the superheated steam, the reaction continues at a constant rate. Superheated steam injection is continued until hydrogen is no

longer being generated. The system is then cooled and rinsed and the fluid is drained from the system.

PERFORM IN PLACE CLEANING OF VESSELS, COMPONENTS, AND LARGE BORE PIPE
A portable/temporary radionuclide air emission unit (PTRAEU) would be used to clean, in place, large bore sodium pipe [greater than or equal to ~20 centimeter (8 inch) diameter], components and vessels in the primary and secondary sodium cooling systems. The PTRAEU also would be used to clean the Interim Decay Storage (IDS) and Fuel Storage Facility (FSF) vessels [Note: Select components in the primary sodium system, and large diameter piping and components in the secondary sodium system may be removed and cleaned in FSF or the Maintenance and Storage Facility (MASF), as described below].

Typically, penetrations into the piping/vessels would be made at appropriate locations using a low speed drill. Existing sodium heating systems would be energized, and piping/vessels heated to liquefy the existing sodium residuals. A PTRAEU would be connected to the penetration points, and used at various locations to inject the superheated steam into plant systems.

The superheated steam would be injected. Hydrogen generation would be monitored to follow the reaction. Sulfuric acid would be added to the resultant process liquid (i.e., sodium hydroxide solution) to reduce the pH to <13. This solution would be routed for offloading to tanker transport for overland transfer to Liquid Effluent Treatment Facility (LERF) and subsequent treatment at 200 Area Effluent Treatment Facility (ETF). If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

REMOVE SMALL BORE PIPE AND COMPONENTS FOR REACTION IN A CLEANING STATION
Small bore piping [<20 centimeter (8 inch) diameter], valves and other components [e.g., core component pots from IDS, fuel storage tubes from FSF, and dump heat exchangers (DHX) tube bundles] may be removed and processed in a proposed stationary cleaning station that would be located in FSF. Mechanical means (e.g., portable saws, pipe cutters) would be used to cut the pipe, valves, and components into manageable size. All heat exchanger tube bundles, which contain multiple parallel flow paths, would be dismantled to ensure effective cleaning.

The proposed FSF stationary cleaning station would consist of a chamber with removable rack for loading piping and components. The piping would be loaded at an angle, allowing the residual sodium to drain to a catch basin when heated before the injection of inert gas and/or reaction medium. The process in the cleaning station would be consistent with the in place process where the resultant waste sodium hydroxide solution is collected, the pH reduced to <13, and transported to the 200 Areas. The FSF is considered an appropriate location due to availability of sufficient floor space, existing overhead crane, available utilities, and proximity to proposed operations. If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

Cleaned piping and components would be disposed of in a Hanford Site solid waste management facility.

REMOVE LARGE COMPONENTS FOR CLEANING
The large diameter cleaning vessel (LDCV) located in the existing MASF could be used for cleaning large components following removal (e.g., primary sodium pumps, intermediate heat exchanger (IHX) tube bundles, and instrument trees). The LDCV could be retrofitted with a new super heated steam supply and associated control system for use in cleaning the aforementioned components. The IHX tube bundles, which contain multiple parallel sodium flow paths, may be dismantled to ensure effective cleaning. Small bore pipe and components also could be cleaned in MASF, if necessary.

OTHER DEACTIVATION ACTIVITIES
Other related routine, continued deactivation activities that could occur as part of the proposed action are: remove/dispose of asbestos; remove/stabilize existing hazards in conjunction with systems and equipment deactivation associated with sodium residuals; remove/recycle/dispose excess deactivated equipment and components; and remove depleted uranium and/or lead shielding.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.28E-04 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	2.00E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(c)
Alpha release rate based on Pu-239			
B/G - 0	4.76E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(c)
Beta/Gamma release rate based on Cs-137			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Co - 60 Cs - 137 Mn - 54 Pu - 239 Sr - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) OPERATION REQUIREMENTS- Radiological Work Permits/ Work Packages
Operations shall be performed in accordance with the controls specified in radiation work planning documents and/or operating procedures and shall be available for inspection upon request. (WAC 246-247-060(5) and WAC 246-247-080(10))

5) OPERATION REQUIREMENTS- Radiological Control Personnel Support
All activities shall be conducted under the auspices of radiological or health physics control technicians or personnel. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used, as necessary to contain contamination. (WAC 246-247-060(5))

6) OPERATION REQUIREMENTS- New Activities
Prior to the start of activities that introduce radionuclides into MASF (e.g., equipment cleaning, sodium reaction), a re-evaluation of existing abatement control technology will be made to determine if additional controls are required. (WAC 246-247-060(5))

7) OPERATION LIMITATIONS- Sodium
The total amount of sodium reacted from all emission units shall not exceed 4,000 gallons per year with no more than 2,000 gallons challenging a single emission unit. (WAC 246-247-060(5)) and (WAC 246-247-040(5))

8) WDOH NOTIFICATION- Change in PTE Calculations
The department will be notified if radionuclides other than Co-60, Cs-137, Mn-54, Pu-239, and Sr-90 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI. (WAC 246-247-040(5) and WAC 246-247-110(8))

9) MONITORING- Alternate Approval
Emissions would be routed through the existing MASF ventilation system; for conservatism no filtration is assumed. (WAC 246-247-075(4))

10) ABATEMENT TECHNOLOGY- Alternate Approval
The existing HEPA filters may remain in place without annual aerosol testing and are not subject to replacement as they do not perform as abatement technology. (WAC 246-247-060(5))

11) CONTAMINATION CONTROL- Leaks and Spills
Appropriate spill prevention procedures shall be in place to minimize the release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills. (WAC 246-247-060(5))

Emission Unit ID: 395

400 P-FFTFRESB-001

FFTF-RE-SB

This is a MINOR, ACTIVELY ventilated emission unit.

FAST FLUX TEST FACILITY COMPLEX

Emission Unit Information

Stack Height: 20.00 ft. 6.10 m. Stack Diameter 4.40 ft. 1.34 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 13.10 ft/second. 3.99 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Fan	1	Intermettent use No other controls

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/ year or continuously during operation whichever is less (if operated)

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the FFTF support surveillance and maintenance operations for decontamination and deactivation at the Hanford Site.

Emission Unit ID: 396

400 P-FFTFHTTR-001

FFTF-HT-TR

This is a MINOR, ACTIVELY ventilated emission unit.

FAST FLUX TEST FACILITY COMPLEX

Emission Unit Information

Stack Height: 29.00 ft. 8.84 m. Stack Diameter 2.20 ft. 0.67 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 17.40 ft/second. 5.30 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Fan	1	Intermittent use

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/ year or continuously during operation whichever is less (if operated)

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the FFTF support surveillance and maintenance operations for decontamination and deactiviation at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operations of FFTF-HT-TR to Support Surveillance and Maintenance Operations for Decontamination and Deactivation at the Hanford Site (Replaces NOC 833)	AIR 15-1105	11/10/2015	975

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.70E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The activity will involve reaction of sodium residuals associated with the Fast Flux Test Facility Project systems and equipment. This activity could be conducted in place or at designated cleaning locations. Typically, the sodium residuals would be reacted with superheated steam. The primary advantages of the superheated steam process (SSP) are that it does not allow condensation to occur and component cleaning can be performed in a shorter time period. Prior to steam injection into the system to be cleaned the steam is heated to ~ 204 C (400 F). The equipment to be cleaned is heated to a minimum of 100 C (212 F) and higher if possible. Most systems will require multiple injection points. As the superheated steam reacts with the metallic sodium, the temperature increases. The temperature is controlled such that the maximum reaction temperature is no greater than ~538 C (1,000 F).

Because of the high initial temperature and the increase of the temperature caused by the reaction, no condensation occurs. The caustic formed is a liquid at the processing temperatures and because it is denser than the liquid sodium, it settles to the bottom of any pools leaving the sodium on top where it is always

exposed to the superheated steam. Due to the continued exposure of the molten sodium to the superheated steam, the reaction continues at a constant rate. Superheated steam injection is continued until hydrogen is no longer being generated. The system is then cooled and rinsed and the fluid is drained from the system.

PERFORM IN PLACE CLEANING OF VESSELS, COMPONENTS, AND LARGE BORE PIPE
A portable/temporary radionuclide air emission unit (PTRAEU) would be used to clean, in place, large bore sodium pipe [greater than or equal to ~20 centimeter (8 inch) diameter], components and vessels in the primary and secondary sodium cooling systems. The PTRAEU also would be used to clean the Interim Decay Storage (IDS) and Fuel Storage Facility (FSF) vessels [Note: Select components in the primary sodium system, and large diameter piping and components in the secondary sodium system may be removed and cleaned in FSF or the Maintenance and Storage Facility (MASF), as described below].

Typically, penetrations into the piping/vessels would be made at appropriate locations using a low speed drill. Existing sodium heating systems would be energized, and piping/vessels heated to liquefy the existing sodium residuals. A PTRAEU would be connected to the penetration points, and used at various locations to inject the superheated steam into plant systems.

The superheated steam would be injected. Hydrogen generation would be monitored to follow the reaction. Sulfuric acid would be added to the resultant process liquid (i.e., sodium hydroxide solution) to reduce the pH to <13. This solution would be routed for offloading to tanker transport for overland transfer to Liquid Effluent Treatment Facility (LERF) and subsequent treatment at 200 Area Effluent Treatment Facility (ETF). If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

REMOVE SMALL BORE PIPE AND COMPONENTS FOR REACTION IN A CLEANING STATION
Small bore piping [<20 centimeter (8 inch) diameter], valves and other components [e.g., core component pots from IDS, fuel storage tubes from FSF, and dump heat exchangers (DHX) tube bundles] may be removed and processed in a proposed stationary cleaning station that would be located in FSF. Mechanical means (e.g., portable saws, pipe cutters) would be used to cut the pipe, valves, and components into manageable size. All heat exchanger tube bundles, which contain multiple parallel flow paths, would be dismantled to ensure effective cleaning.

The proposed FSF stationary cleaning station would consist of a chamber with removable rack for loading piping and components. The piping would be loaded at an angle, allowing the residual sodium to drain to a catch basin when heated before the injection of inert gas and/or reaction medium. The process in the cleaning station would be consistent with the in place process where the resultant waste sodium hydroxide solution is collected, the pH reduced to <13, and transported to the 200 Areas. The FSF is considered an appropriate location due to availability of sufficient floor space, existing overhead crane, available utilities, and proximity to proposed operations. If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

Cleaned piping and components would be disposed of in a Hanford Site solid waste management facility.

REMOVE LARGE COMPONENTS FOR CLEANING
The large diameter cleaning vessel (LDCV) located in the existing MASF could be used for cleaning large components following removal (e.g., primary sodium pumps, intermediate heat exchanger (IHX) tube bundles, and instrument trees). The LDCV could be retrofitted with a new super heated steam supply and associated control system for use in cleaning the aforementioned components. The IHX tube bundles, which contain multiple parallel sodium flow paths, may be dismantled to ensure effective cleaning. Small bore pipe and components also could be cleaned in MASF, if necessary.

OTHER DEACTIVATION ACTIVITIES
Other related routine, continued deactivation activities that could occur as part of the proposed action are: remove/dispose of asbestos; remove/stabilize existing hazards in conjunction with systems and equipment deactivation associated with sodium residuals; remove/recycle/dispose excess deactivated equipment and components; and remove depleted uranium and/or lead shielding.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.70E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	4.90E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Alpha release rate based on Pu-239			
B/G - 0	1.30E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Beta/Gamma release rate based on Cs-137			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ba - 137 m	Co - 60	Cs - 134	Cs - 137	H - 3
Mn - 54	Na - 22	Pu - 239	Ru - 106	Zn - 65

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) OPERATION REQUIREMENTS- Radiological Work Permits/ Work Packages
Operations shall be performed in accordance with the controls specified in radiation work planning documents and/or operating procedures and shall be available for inspection upon request. (WAC 246-247-060(5) and WAC 246-247-080(10))

5) OPERATION REQUIREMENTS- Radiological Control Personnel Support
All activities shall be conducted under the auspices of radiological or health physics control technicians or personnel. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used, as necessary to contain contamination. (WAC 246-247-060(5))

6) OPERATION LIMITATIONS- Sodium
The total amount of sodium reacted from all emission units shall not exceed 4,000 gallons per year with no more than 2,000 gallons challenging a single emission unit. (WAC 246-247-060(5)) and (WAC 246-247-040(5))

7) WDOH NOTIFICATION- Change in PTE Calculations
The department will be notified if radionuclides other than Ba-137m, Co-60, Cs-134, Cs-137, H-3, Mn-54, Na-22, Pu-239, Ru-106, and Zn-65 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI. (WAC 246-247-040(5) and WAC 246-247-110(8))

8) CONTAMINATION CONTROL- Leaks and Spills
Appropriate spill prevention procedures shall be in place to minimize the release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills. (WAC 246-247-060(5))

Emission Unit ID: 397

400 P-FFTFCBEX-001

FFTF-CB-EX

This is a MINOR, ACTIVELY ventilated emission unit.

FAST FLUX TEST FACILITY COMPLEX

Emission Unit Information

Stack Height: 47.00 ft. 14.33 m. Stack Diameter 4.90 ft. 1.49 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: 19.80 ft/second. 6.04 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
Bldg 405 Process Operations	Fan	2	In parallel (intermittent use)
Access Control Area Process	Fan	1	Intermittent use

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Engineering calculations based on WAC 246-247-080 (3)(a)	TOTAL ALPHA TOTAL BETA Tritium	Annual (Annual Radionuclide Report)

Sampling Requirements Radionuclide emissions will be estimated annually using the Radionuclide Air Emissions Report for the Hanford Site results in lieu of monitoring

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the FFTF support surveillance and maintenance operations for decontamination and deactiviation at the Hanford Site. The FFTF is currently in Surveillance and Maintenance Mode, which began June 1, 2009.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operations of FFTF-CB-EX to Support Surveillance and Maintenance Operations for Decontamination and Deactivation at the Hanford Site (Replaces NOC 833)	AIR 15-1106	11/10/2015	976

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.70E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The activity will involve reaction of sodium residuals associated with the Fast Flux Test Facility Project systems and equipment. This activity could be conducted in place or at designated cleaning locations. Typically, the sodium residuals would be reacted with superheated steam. The primary advantages of the superheated steam process (SSP) are that it does not allow condensation to occur and component cleaning can be performed in a shorter time period. Prior to steam injection into the system to be cleaned the steam is heated to ~ 204 C (400 F). The equipment to be cleaned is heated to a minimum of 100 C (212 F) and higher if possible. Most systems will require multiple injection points. As the superheated steam reacts with the metallic sodium, the temperature increases. The temperature is controlled such that the maximum reaction temperature is no greater than ~538 C (1,000 F).

Because of the high initial temperature and the increase of the temperature caused by the reaction, no condensation occurs. The caustic formed is a liquid at the processing temperatures and because it is denser than the liquid sodium, it settles to the bottom of any pools leaving the sodium on top where it is always exposed to the superheated steam. Due to the continued exposure of the molten sodium to the superheated steam, the reaction continues at a constant rate. Superheated steam injection is continued until hydrogen is no longer being generated. The system is then cooled and rinsed and the fluid is drained from the system.

PERFORM IN PLACE CLEANING OF VESSELS, COMPONENTS, AND LARGE BORE PIPE
A portable/temporary radionuclide air emission unit (PTRAEU) would be used to clean, in place, large bore sodium pipe [greater than or equal to ~20 centimeter (8 inch) diameter], components and vessels in the primary and secondary sodium cooling systems. The PTRAEU also would be used to clean the Interim Decay Storage (IDS) and Fuel Storage Facility (FSF) vessels [Note: Select components in the primary sodium system, and large diameter piping and components in the secondary sodium system may be removed and cleaned in FSF or the Maintenance and Storage Facility (MASF), as described below].

Typically, penetrations into the piping/vessels would be made at appropriate locations using a low speed drill. Existing sodium heating systems would be energized, and piping/vessels heated to liquefy the existing sodium residuals. A PTRAEU would be connected to the penetration points, and used at various locations to inject the superheated steam into plant systems.

The superheated steam would be injected. Hydrogen generation would be monitored to follow the reaction. Sulfuric acid would be added to the resultant process liquid (i.e., sodium hydroxide solution) to reduce the pH to <13. This solution would be routed for offloading to tanker transport for overland transfer to Liquid Effluent Treatment Facility (LERF) and subsequent treatment at 200 Area Effluent Treatment Facility (ETF). If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

REMOVE SMALL BORE PIPE AND COMPONENTS FOR REACTION IN A CLEANING STATION
Small bore piping [<20 centimeter (8 inch) diameter], valves and other components [e.g., core component pots from IDS, fuel storage tubes from FSF, and dump heat exchangers (DHX) tube bundles] may be removed and processed in a proposed stationary cleaning station that would be located in FSF. Mechanical means (e.g., portable saws, pipe cutters) would be used to cut the pipe, valves, and components into manageable size. All heat exchanger tube bundles, which contain multiple parallel flow paths, would be dismantled to ensure effective cleaning.

The proposed FSF stationary cleaning station would consist of a chamber with removable rack for loading piping and components. The piping would be loaded at an angle, allowing the residual sodium to drain to a catch basin when heated before the injection of inert gas and/or reaction medium. The process in the cleaning station would be consistent with the in place process where the resultant waste sodium hydroxide solution is collected, the pH reduced to <13, and transported to the 200 Areas. The FSF is considered an appropriate location due to availability of sufficient floor space, existing overhead crane, available utilities, and proximity to proposed operations. If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

Cleaned piping and components would be disposed of in a Hanford Site solid waste management facility.

REMOVE LARGE COMPONENTS FOR CLEANING
The large diameter cleaning vessel (LDCV) located in the existing MASF could be used for cleaning large components following removal (e.g., primary sodium pumps, intermediate heat exchanger (IHX) tube bundles, and instrument trees). The LDCV could be retrofitted with a new super heated steam supply and associated control system for use in cleaning the aforementioned components. The IHX tube bundles, which contain multiple parallel sodium flow paths, may be dismantled to ensure effective cleaning. Small bore pipe and components also could be cleaned in MASF, if necessary.

OTHER DEACTIVATION ACTIVITIES
Other related routine, continued deactivation activities that could occur as part of the proposed action are: remove/dispose of asbestos; remove/stabilize existing hazards in conjunction with systems and equipment

deactivation associated with sodium residuals; remove/recycle/dispose excess deactivated equipment and components; and remove depleted uranium and/or lead shielding.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.70E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	3.10E-08	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Alpha release rate based on Pu-239			
B/G - 0	3.70E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Beta/Gamma release rate based on Cs-137			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ba - 137 m	Co - 60	Cs - 134	Cs - 137	H - 3
Mn - 54	Na - 22	Pu - 239	Ru - 106	Zn - 65

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) OPERATION REQUIREMENTS- Radiological Work Permits/ Work Packages
Operations shall be performed in accordance with the controls specified in radiation work planning documents and/or operating procedures and shall be available for inspection upon request. (WAC 246-247-060(5) and WAC 246-247-080(10))

5) OPERATION REQUIREMENTS- Radiological Control Personnel Support
All activities shall be conducted under the auspices of radiological or health physics control technicians or personnel. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used, as necessary to contain contamination. (WAC 246-247-060(5))

6) OPERATION LIMITATIONS- Sodium
The total amount of sodium reacted from all emission units shall not exceed 4,000 gallons per year with no more than 2,000 gallons challenging a single emission unit. (WAC 246-247-060(5)) and (WAC 246-247-040(5))

7) WDOH NOTIFICATION- Change in PTE Calculations
The department will be notified if radionuclides other than Ba-137m, Co-60, Cs-134, Cs-137, H-3, Mn-54, Na-22, Pu-239, Ru-106, and Zn-65 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI. (WAC 246-247-040(5) and WAC 246-247-110(8))

8) MONITORING- Engineering Calculations
The annual “Radionuclide Air Emissions Report for the Hanford Site” calculated emission results for FFTF-CB-EX shall be used to provide periodic confirmatory measurement for the minor stack (emission unit) 400 P-FFTFCBX-001 as a compliant replacement for record sampling. (WAC 246-247-080(3)(a))

9) CONTAMINATION CONTROL- Leaks and Spills
Appropriate spill prevention procedures shall be in place to minimize the release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills. (WAC 246-247-060(5))

Emission Unit ID: 398

400 Sodium Storage Facility

FFTF-402-1

This is a MINOR, PASSIVELY ventilated emission unit.

FAST FLUX TEST FACILITY COMPLEX

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		TOTAL ALPHA TOTAL BETA	

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the Sodium Storage Facility (SSF) support surveillance and maintenance operations for decontamination and deactivation at the Hanford Site by storing sodium. The SSF stores the sodium in a solid state for an extended period. Approximately 984,100 liters of sodium from the FFTF was offloaded to four tanks in the SSF.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Construction and Operation of Sodium Storage Facility (Replaces NOC 842)	AIR 17-707	7/7/2017	1032

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.81E-07 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Offloading approximately 984,100 liters of sodium from the FFTF to tank storage in the Sodium Storage Facility (SSF). Unused carbon steel sodium tanks (three 302,800-liter tanks and one 196,800-liter tank), originally built for the Clinch River Breeder Reactor Plant, shall be transported from their current location in the 300 Area and installed adjacent to the FFTF complex. Once the storage tanks are in place, a concrete building will be constructed around and over them to provide shielding and weather protection for the tanks and associated equipment. The sodium will be stored in a solid state, under an inert nitrogen or argon gas blanket.

Sodium shall be transferred to the SSF in batches from several different sodium storage/drain vessels within the FFTF. Following the transfer, the sodium shall be allowed to solidify.

Sodium transfers shall be accomplished in the following manner:

1. The receiving tank and interconnecting piping shall be preheated to between 150 C and 200 C by electric heaters.

2. When the proper temperatures have been established, the sodium shall be transferred from the supply tank to the receiving tank by establishing a differential pressure

between the supply tank and receiving tank as needed to facilitate the transfer of sodium between the tanks.

The supply tank shall be pressurized using the existing FFTF argon piping. The receiving tank in the SSF will be evacuated using a vacuum pump and a high-efficiency particulate air (HEPA) type process filter connected to the tanks at the tank vent line.

3. The gas system valves shall be operated as needed to maintain the covergas differential pressure and the sodium valves opened, allowing the sodium to flow from one tank to the other. The transfers will occur in batches, with more than one cycle needed to completely fill one SSF storage tank. The inert gas displaced from the tanks during the filling evolution shall be directed out the HEPA or HEPA type filtered exhaust paths.

4. After all the transfers for a tank are complete, the inert gas system shall be used to establish the desired cover gas pressure and the tank shall be allowed to cool to ambient temperature, allowing the sodium to solidify.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.81E-07 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Cs - 137	6.46E-12	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Any radionuclide on the chart of nuclides could be encountered during Sodium Storage Facility loading operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate or gaseous form. Although any radionuclide could be present, for conservatism all beta-gamma is assumed to be Cs-137 and all alpha is assumed to be Pu-239 for dose

H - 3	3.81E-07	Gas	WAC 246-247-030(21)(a)

Any radionuclide on the chart of nuclides could be encountered during Sodium Storage Facility loading operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate or gaseous form. Although any radionuclide could be present, for conservatism all beta-gamma is assumed to be Cs-137 and all alpha is assumed to be Pu-239 for dose

Na - 22	4.81E-11	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Any radionuclide on the chart of nuclides could be encountered during Sodium Storage Facility loading operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate or gaseous form. Although any radionuclide could be present, for conservatism all beta-gamma is assumed to be Cs-137 and all alpha is assumed to be Pu-239 for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

Pu - 239	1.57E-12	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Any radionuclide on the chart of nuclides could be encountered during Sodium Storage Facility loading operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate or gaseous form. Although any radionuclide could be present, for conservatism all beta-gamma is assumed to be Cs-137 and all alpha is assumed to be Pu-239 for dose

The radioactive isotopes identified for this emission unit are (no quantities specified):

Cs - 137 H - 3 Na - 22 Pu - 239

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) HOW TRITIUM EMISSIONS ARE CALCULATED

During the periods when sodium transfers are performed, the estimated emissions from the SSF shall be calculated using the following method.

Assumptions:

The equivalent of one tank volume at standard temperature and pressure is evacuated after the initial contamination-free pump down.

If the uncontaminated receiving tank is initially evacuated, it may provide a sufficient pressure drop to complete the sodium transfer with no release of contaminated gas; however, for purposes of providing a conservative estimate of potential emissions, it is assumed an entire tank volume of contaminated cover gas is released to the atmosphere.

The concentration of tritium in the primary sodium, conservatively assumed to fill three of the 302,800-liter tanks, is the same as historical concentrations of tritium in the reactor cover gas in 1992 (about 5 x 10-5 uCi/ml).

The concentration of tritium in the secondary sodium (assumed to fill the 196,800 liter tank) is equal to the historical concentration of the secondary sodium cover gas in 1992 (about 4E-6 uCi/ml). The remaining 52,996 liters of secondary sodium will go to a 302,800 liter tank.

The amount of tritium released during the fill of one tank with primary sodium would be:

(Volume of sodium transferred in liters) (103 ml/liter) (5 E-5 uCi/ml) = Amount in uCi

This shall be tracked via an approved log.

5) PERIODIC CONFIRMATORY MEASUREMENTS - PERFORMED BY RADIOLOGICAL SMEAR SURVEYS AND MONITORING

During the storage periods when no new sources are added to the SSF, the sodium shall be in a solid form after cooling. Radiological smear surveys of the facility and monitoring described in section 5 of the general condition in this license shall provide periodic confirmatory measurement.

Emission Unit ID: 399

400 P-437-002

437-1-61

This is a MINOR, ACTIVELY ventilated emission unit.

437 Maintenance and Storage (MASF)

Emission Unit Information

Stack Height: 38.40 ft. 11.70 m. Stack Diameter 1.10 ft. 0.34 m.

Average Stack Effluent Temperature: 72 degrees Fahrenheit. 22 degrees Celsius.

Average Stack ExhaustVelocity: 18.75 ft/second. 5.72 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Fan	1	Intermittent operation

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/ year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the MASF support K Basin slduge research and development activities.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operations of 437-1-61 to Support K Basin Sludge Research and Development (Replaces NOC 833)	AIR 15-1104	11/10/2015	974

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.19E-08 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The activity will involve reaction of sodium residuals associated with the Fast Flux Test Facility Project systems and equipment. This activity could be conducted in place or at designated cleaning locations. Typically, the sodium residuals would be reacted with superheated steam. The primary advantages of the superheated steam process (SSP) are that it does not allow condensation to occur and component cleaning can be performed in a shorter time period. Prior to steam injection into the system to be cleaned the steam is heated to ~ 204 C (400 F). The equipment to be cleaned is heated to a minimum of 100 C (212 F) and higher if possible. Most systems will require multiple injection points. As the superheated steam reacts with the metallic sodium, the temperature increases. The temperature is controlled such that the maximum reaction temperature is no greater than ~538 C (1,000 F).

Because of the high initial temperature and the increase of the temperature caused by the reaction, no condensation occurs. The caustic formed is a liquid at the processing temperatures and because it is denser than the liquid sodium, it settles to the bottom of any pools leaving the sodium on top where it is always exposed to the superheated steam. Due to the continued exposure of the molten sodium to the superheated steam, the reaction continues at a constant rate. Superheated steam injection is continued until hydrogen is no

longer being generated. The system is then cooled and rinsed and the fluid is drained from the system.

PERFORM IN PLACE CLEANING OF VESSELS, COMPONENTS, AND LARGE BORE PIPE
A portable/temporary radionuclide air emission unit (PTRAEU) would be used to clean, in place, large bore sodium pipe [greater than or equal to ~20 centimeter (8 inch) diameter], components and vessels in the primary and secondary sodium cooling systems. The PTRAEU also would be used to clean the Interim Decay Storage (IDS) and Fuel Storage Facility (FSF) vessels [Note: Select components in the primary sodium system, and large diameter piping and components in the secondary sodium system may be removed and cleaned in FSF or the Maintenance and Storage Facility (MASF), as described below].

Typically, penetrations into the piping/vessels would be made at appropriate locations using a low speed drill. Existing sodium heating systems would be energized, and piping/vessels heated to liquefy the existing sodium residuals. A PTRAEU would be connected to the penetration points, and used at various locations to inject the superheated steam into plant systems.

The superheated steam would be injected. Hydrogen generation would be monitored to follow the reaction. Sulfuric acid would be added to the resultant process liquid (i.e., sodium hydroxide solution) to reduce the pH to <13. This solution would be routed for offloading to tanker transport for overland transfer to Liquid Effluent Treatment Facility (LERF) and subsequent treatment at 200 Area Effluent Treatment Facility (ETF). If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

REMOVE SMALL BORE PIPE AND COMPONENTS FOR REACTION IN A CLEANING STATION
Small bore piping [<20 centimeter (8 inch) diameter], valves and other components [e.g., core component pots from IDS, fuel storage tubes from FSF, and dump heat exchangers (DHX) tube bundles] may be removed and processed in a proposed stationary cleaning station that would be located in FSF. Mechanical means (e.g., portable saws, pipe cutters) would be used to cut the pipe, valves, and components into manageable size. All heat exchanger tube bundles, which contain multiple parallel flow paths, would be dismantled to ensure effective cleaning.

The proposed FSF stationary cleaning station would consist of a chamber with removable rack for loading piping and components. The piping would be loaded at an angle, allowing the residual sodium to drain to a catch basin when heated before the injection of inert gas and/or reaction medium. The process in the cleaning station would be consistent with the in place process where the resultant waste sodium hydroxide solution is collected, the pH reduced to <13, and transported to the 200 Areas. The FSF is considered an appropriate location due to availability of sufficient floor space, existing overhead crane, available utilities, and proximity to proposed operations. If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

Cleaned piping and components would be disposed of in a Hanford Site solid waste management facility.

REMOVE LARGE COMPONENTS FOR CLEANING
The large diameter cleaning vessel (LDCV) located in the existing MASF could be used for cleaning large components following removal (e.g., primary sodium pumps, intermediate heat exchanger (IHX) tube bundles, and instrument trees). The LDCV could be retrofitted with a new super heated steam supply and associated control system for use in cleaning the aforementioned components. The IHX tube bundles, which contain multiple parallel sodium flow paths, may be dismantled to ensure effective cleaning. Small bore pipe and components also could be cleaned in MASF, if necessary.

OTHER DEACTIVATION ACTIVITIES
Other related routine, continued deactivation activities that could occur as part of the proposed action are: remove/dispose of asbestos; remove/stabilize existing hazards in conjunction with systems and equipment deactivation associated with sodium residuals; remove/recycle/dispose excess deactivated equipment and components; and remove depleted uranium and/or lead shielding.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.19E-08 mrem/year. Approved are the associated potential release rates (Curies/year) of:

The radioactive isotopes identified for this emission unit are (no quantities specified):
Cs - 137

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) OPERATION REQUIREMENTS- Radiological Work Permits/ Work Packages
Operations shall be performed in accordance with the controls specified in radiation work planning documents and/or operating procedures and shall be available for inspection upon request. (WAC 246-247-060(5) and WAC 246-247-080(10))

5) OPERATION REQUIREMENTS- Radiological Control Personnel Support
All activities shall be conducted under the auspices of radiological or health physics control technicians or personnel. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used, as necessary to contain contamination. (WAC 246-247-060(5))

6) OPERATION REQUIREMENTS- New Activities
Prior to the start of activities that introduce radionuclides into MASF (e.g., equipment cleaning, sodium reaction), a re-evaluation of existing abatement control technology will be made to determine if additional controls are required. (WAC 246-247-060(5))

7) OPERATION LIMITATIONS- Sodium
The total amount of sodium reacted from all emission units shall not exceed 4,000 gallons per year with no more than 2,000 gallons challenging a single emission unit. (WAC 246-247-060(5)) and (WAC 246-247-040(5))

8) WDOH NOTIFICATION- Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI. (WAC 246-247-040(5) and WAC 246-247-110(8))

9) MONITORING- Alternate Approval
Emissions would be routed through the existing MASF ventilation system; for conservatism no filtration is assumed. (WAC 246-247-075(4))

10) ABATEMENT TECHNOLOGY- Alternate Approval
The existing HEPA filters may remain in place without annual aerosol testing and are not subject to replacement as they do not perform as abatement technology. (WAC 246-247-060(5))

11) CONTAMINATION CONTROL- Leaks and Spills
Appropriate spill prevention procedures shall be in place to minimize the release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills. (WAC 246-247-060(5))

Emission Unit ID: 402

200E P-296B001-001

296-B-1

This is a MAJOR, ACTIVELY ventilated emission unit.

B- PLANT

Emission Unit Information

Stack Height: 90.00 ft. 27.43 m. Stack Diameter 2.67 ft. 0.81 m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	2	Two trains, one bank in each train
	HEPA	4	Two trains, 2 banks in each train
	Fan	2	Only one fan operates at a time.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	137Cs, 90Sr	Particulates shall be continuously sampled and analyzed every two weeks for gross alpha and gross beta/gamma, composited quarterly, and analyzed isotopically

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at B Plant involve surveillance and maintenance operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Activities at B Plant that Involve Surveillance and Maintenance (S&M) Operations at Hanford Site (replaces NOC 645)	AIR 17-1005	10/12/2017	1274

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.52E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted

   Operate the installed ventilation systems and conduct S&M activities.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 7.87E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	2.56E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Cs - 137	8.40E+02	Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Pu - 238	3.60E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Pu - 239/240	3.84E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Sb - 125		Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% fo the abated dose.			
Sr - 90	3.48E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Y - 90		Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% fo the abated dose.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241 Cs - 137 Pu - 238 Pu - 239/240 Sb - 125

Sr - 90 Y - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) The new HEPA filters must be fully compatable with ANSI 509/510 standards.

Emission Unit ID: 412

300 EP-331-01-V

EP-331-01-V

This is a MAJOR, ACTIVELY ventilated emission unit.

331 LIFE SCI LAB

Emission Unit Information

Stack Height: 62.00 ft. 18.90 m. Stack Diameter 6.50 ft. 1.98 m.

Average Stack Effluent Temperature: 75 degrees Fahrenheit. 24 degrees Celsius.

Average Stack ExhaustVelocity: 26.53 ft/second. 8.09 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Labs and hoods and glove boxes.
	Fan	1	1 of 3 fans operating

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Continuous

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This 62 foot tall stack exhausts filtered building ventilation air. Particulate emissions are sampled. The mission of the 331 Building is to conduct fundamental science and to develop environmental technology. The 331 Building provides research capabilities to study the interactions of chemicals and radionuclides with plants, animals, and microorganisms and the fate of chemicals and radionuclides in the environment. The building also has research capabilities for conducting studies on the uptake and transformation effects of radioactive material and chemicals in soils, plants, animals, and microorganisms.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Life Sciences Laboratory - 1 (331 Building), Revision 2, 300 Area, Hanford Site, Richland, Washington (Replaces NOC 712)	AIR 11-705	7/22/2011	808

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 9.30E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The mission of the 331 Building is to conduct fundamental science and to develop environmental technology. Research activities conducted in the 331 Building support the Hanford Site environmental mission and other key DOE missions of national and international importance. Research activities performed within the 331 Building include the use of radioactive materials. Laboratory processes are conducted “continuously” (i.e., year-round, during normal business, swing-shift, night-shift, and weekend hours). The 331 Building provides research capabilities to study the interactions of chemicals and radionuclides with plants, animals, and microorganisms and the fate of chemicals and radionuclides in the environment. The building also has

research capabilities for conducting studies on the uptake and transformation effects of radioactive material and chemicals in soils, plants, animals, and microorganisms.

The inventory of radioactive material in the building can include gram quantities of fissionable materials and up to curie quantities of other radionuclides. The laboratory activities conducted in the 331 Building include:
·Experimental studies with molecular and cellular processes.
·Studies to determine precise cross-species and low-dose extrapolation of health risks and to understand disease mechanisms.
·Basic and applied research concerning microorganisms and/or their processes in various environments.
·Subsurface microbiology including the physiology and ecology of subsurface microorganisms, degradation of organic contaminants and bioremediation, enzymatic reductions of metals, and biogeochemical cycling of nutrients.
·Studies investigating macromolecular structure and dynamics and consequences of observables on molecular function.
·Development of instrumentation and analytical methods.
·Development of comprehensive environmental monitoring programs.
·Development of advanced scientific and technological solutions for long-term stewardship of waste sites.
·Waste management activities including satellite accumulation areas and <90 day storage areas.
·Characterizing and monitoring aquatic and terrestrial ecosystems including the development and monitoring of new technologies and methods.
·Studies of impacts of water use practices on fisheries and wildlife and the response of the ecosystems to engineered structures and natural and man-induced stresses.
·Activities involving nuclear process engineering, radiomaterials characterization, and radiochemical separations and processing.
·Studies of the health effects of chemical and radiation exposure on animals (rodents) and in cells grown in culture.
·Examining the uptake and transformation effects of radionuclides in soils, plants, animals and microorganisms.
·Studies with radioactive tracer materials in biological and non-biologic systems.
·Research to promote the understanding of the chemical, biological, and biogeochemical processes that govern the mobility, transportation, and degradation of a range of inorganic, radionuclide, and organic contaminants in soils, sediments, and ground water systems.
·Measurements of exposures to physical, radiological, and chemical agents.
·Developing technology for the separation, purification, production, and delivery of radioisotopes (e.g., for medical purposes, and standards development).
·Research and laboratory activities that may include processes where the temperature may be equal to or exceed 100ºC.
·Research activities involving mixed activation products (MAP) and mixed fission products (MFP).
·Laboratory setup projects involving fume hood removals/upgrades and ductwork tie-in.
· Microscopic and spectroscopic characterization of the mass transfer of radioactive material in soils and sediments under the influence of biogeochemical reactions.
· Investigate the sorption and desorption processes of radioactive material in soils and sediments.
· Develop models to predict the geochemical retardation of radioactive material in sediments.
· Activities involving corrosion and stress-corrosion cracking studies of irradiated specimens of metals and other materials.
·Studies investigating structural properties, such as tensile and compression strengths, of irradiated materials.
·Activities involving corrosion and stress-corrosion studies of autoclaved materials.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.86E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Ac - 225	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ac - 227		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ac - 228		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ag - 108		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ag - 108 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ag - 109 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ag - 110		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ag - 110 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ag - 111		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Al - 26		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Al - 28		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Am - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Am - 241		Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Am - 242		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Am - 242 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Am - 243	8.40E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes greater than 0.1 mrem/yr PTE TEDE to the MEI and requires monitoring

Am - 245		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Am - 246		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ar - 37		Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ar - 39		Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ar - 41		Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ar - 42	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

As - 74	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

As - 76	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

As - 77	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

At - 217	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Au - 195	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Au - 198	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Au - 198 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 133	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 133 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 137 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Be - 10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Be - 7	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 207	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 210 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 213	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bk - 249	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bk - 250	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 82	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 82 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 83	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 84	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 84 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 85	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 11	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 14	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 14	Gas

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 15	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ca - 41	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ca - 45	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ca - 47	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 107	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 109	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 111 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 113	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 113 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 115	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 115 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 117	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 117 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 249	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 250	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 251	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 252	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cl - 36	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 242	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 243	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 244	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 245	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 246	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 247	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 248	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 56	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 57	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 58	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cr - 49	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cr - 51	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cr - 55	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 131	Gas	

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 132	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 135	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 136	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137	Gas	

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 138	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cu - 64	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cu - 66	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Dy - 165	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Dy - 169	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Er - 169	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Er - 171	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Es - 254	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 150	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 152	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 152 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 154	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 155	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 156	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 157	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

F - 18	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fe - 55	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fe - 59	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fr - 221	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fr - 223	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ga - 67	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ga - 68	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ga - 70	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ga - 72	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Gd - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Gd - 149	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Gd - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Gd - 152	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Gd - 153	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 68	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 71	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 71 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 75	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 77	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 77 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

H - 3	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 175	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 178	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 178 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 181	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 182	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hg - 203	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ho - 163	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ho - 166	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ho - 166 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 122	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 123	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 125	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 126	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 128	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 129	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 130	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 130 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 131	Gas	

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 132	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 132 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 133	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 133 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 134	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 134 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 135	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 111	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 113 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 114	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 114 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 115	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 115 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 116	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 116 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 117	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 117 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ir - 192	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

K - 40	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

K - 42	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 81	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 81 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 83 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 85	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 85 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 87	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 88	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 89	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 90	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 137	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 138	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Lu - 177	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mg - 27	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mg - 28	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 52	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 54	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 56	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 104	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

N - 13	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 22	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 24	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 24 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 100	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 101	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 91 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 92		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 93 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 94		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 95		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 95 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 97		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 97 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 98		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nd - 144		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nd - 147		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 56		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 59		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 63		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 65		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 235		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 236		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 237	1.20E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes greater than 0.1 mrem/yr PTE TEDE to the MEI and requires monitoring

Np - 238		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 239		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 240		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 240 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

O - 15	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

O - 19	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Os - 191	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

P - 32	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

P - 33	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 231	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 234 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 107	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 109	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 145	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 146	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 148 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 149	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 213	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 215	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 216	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 218	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 144 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 234		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 236		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 237		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 238	3.60E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes greater than 0.1 mrem/yr PTE TEDE to the MEI, and represents greater than 10% of the unabated PTE TEDE to the MEI and requires monitoring

Pu - 239	9.20E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes greater than 0.1 mrem/yr PTE TEDE to the MEI, and represents greater than 10% of the unabated PTE TEDE to the MEI and requires monitoring

Pu - 240	2.90E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes greater than 0.1 mrem/yr PTE TEDE to the MEI, and represents greater than 10% of the unabated PTE TEDE to the MEI and requires monitoring

Pu - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 242		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 243		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 244		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 246		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 223		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 224		Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 225		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 228		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 81		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 83		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 84		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 86		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 87	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 90 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Re - 186	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Re - 187	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Re - 188	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 101	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 102	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 102 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 103 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 104	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 105 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 219	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 220	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 222	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 224	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

S - 35	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 122	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 124	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 126	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 126 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 127	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 129	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sc - 46	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sc - 47	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 75	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Si - 31	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 145	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 146	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 153	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 157	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 113	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 117 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 119 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 121	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 121 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 123	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 126	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 85	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 87 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 92	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ta - 179	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ta - 180	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ta - 182	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ta - 182 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ta - 183	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 157	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 158	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 160	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 161	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 101	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 95 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 97 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 98	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 121	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 121 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 123	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 123 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 125 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 127	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 127 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 129	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 129 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 131 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 132	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 133	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 133 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 134	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 227	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 228	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 229	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 230	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 231	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 232	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ti - 44	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ti - 45	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ti - 51	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 201	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 204	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 206	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 207	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tm - 168	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tm - 170	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tm - 171	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 232	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 239	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

V - 48	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

V - 49	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

W - 181	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

W - 185	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

W - 187	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

W - 188	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 122	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 123	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 125	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 127	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 127 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 129 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 131 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 133	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 133 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 135	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 135 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 137	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 138	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 139	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 90 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 91 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 92	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 164	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 169	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 175	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 177	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 69	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 69 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 100	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 98	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ac - 225	Ac - 227	Ac - 228	Ag - 108 m	Ag - 108
Ag - 109 m	Ag - 110 m	Ag - 110	Ag - 111	Al - 26
Al - 28	Am - 241	Am - 242 m	Am - 242	Am - 243
Am - 245	Am - 246	Ar - 37	Ar - 39	Ar - 41
Ar - 42	As - 74	As - 76	As - 77	At - 217
Au - 195	Au - 198	Au - 198 m	Ba - 131	Ba - 133
Ba - 133 m	Ba - 137 m	Ba - 139	Ba - 140	Ba - 141
Ba - 142	Ba - 143	Be - 10	Be - 7	Bi - 207
Bi - 208	Bi - 210 m	Bi - 210	Bi - 211	Bi - 212
Bi - 213	Bi - 214	Bk - 249	Bk - 250	Br - 82
Br - 82 m	Br - 83	Br - 84	Br - 84 m	Br - 85
C - 11	C - 14	C - 15	Ca - 41	Ca - 45
Ca - 47	Cd - 107	Cd - 109	Cd - 111 m	Cd - 113 m
Cd - 113	Cd - 115 m	Cd - 115	Cd - 117	Cd - 117 m
Ce - 139	Ce - 141	Ce - 142	Ce - 143	Ce - 144
Cf - 249	Cf - 250	Cf - 251	Cf - 252	Cl - 36
Cm - 241	Cm - 242	Cm - 243	Cm - 244	Cm - 245
Cm - 246	Cm - 247	Cm - 248	Co - 56	Co - 57
Co - 58	Co - 60	Co - 60 m	Cr - 49	Cr - 51
Cr - 55	Cs - 131	Cs - 132	Cs - 134	Cs - 134 m
Cs - 135	Cs - 136	Cs - 137	Cs - 138	Cs - 139
Cs - 140	Cs - 141	Cu - 64	Cu - 66	Dy - 165
Dy - 169	Er - 169	Er - 171	Es - 254	Eu - 150
Eu - 152	Eu - 152 m	Eu - 154	Eu - 155	Eu - 156
Eu - 157	F - 18	Fe - 55	Fe - 59	Fr - 221
Fr - 223	Ga - 67	Ga - 68	Ga - 70	Ga - 72
Gd - 148	Gd - 149	Gd - 151	Gd - 152	Gd - 153
Ge - 68	Ge - 71	Ge - 71 m	Ge - 75	Ge - 77
Ge - 77 m	H - 3	Hf - 175	Hf - 178	Hf - 178 m
Hf - 181	Hf - 182	Hg - 203	Ho - 163	Ho - 166
Ho - 166 m	I - 122	I - 123	I - 125	I - 126
I - 128	I - 129	I - 130	I - 130 m	I - 131
I - 131	I - 132	I - 132 m	I - 133	I - 133 m

I - 134	I - 134 m	I - 135	In - 106	In - 111
In - 113 m	In - 114 m	In - 114	In - 115	In - 115 m
In - 116	In - 116 m	In - 117	In - 117 m	Ir - 192
K - 40	K - 42	Kr - 81	Kr - 81 m	Kr - 83 m
Kr - 85	Kr - 85 m	Kr - 87	Kr - 88	Kr - 89
Kr - 90	La - 137	La - 138	La - 140	La - 141
La - 142	La - 144	Lu - 177	Mg - 27	Mg - 28
Mn - 52	Mn - 54	Mn - 56	Mo - 103	Mo - 104
Mo - 105	Mo - 93	Mo - 99	N - 13	Na - 22
Na - 24	Na - 24 m	Nb - 100	Nb - 101	Nb - 103
Nb - 91	Nb - 91 m	Nb - 92	Nb - 93 m	Nb - 94
Nb - 95	Nb - 95 m	Nb - 97	Nb - 97 m	Nb - 98
Nd - 144	Nd - 147	Ni - 56	Ni - 59	Ni - 63
Ni - 65	Np - 235	Np - 236	Np - 237	Np - 238
Np - 239	Np - 240	Np - 240 m	O - 15	O - 19
Os - 191	P - 32	P - 33	Pa - 231	Pa - 233
Pa - 234	Pa - 234 m	Pb - 209	Pb - 210	Pb - 211
Pb - 212	Pb - 214	Pd - 103	Pd - 107	Pd - 109
Pm - 143	Pm - 144	Pm - 145	Pm - 146	Pm - 147
Pm - 148 m	Pm - 148	Pm - 149	Pm - 151	Po - 208
Po - 209	Po - 210	Po - 211	Po - 212	Po - 213
Po - 214	Po - 215	Po - 216	Po - 218	Pr - 143
Pr - 144	Pr - 144 m	Pu - 234	Pu - 236	Pu - 237
Pu - 238	Pu - 239	Pu - 240	Pu - 241	Pu - 242
Pu - 243	Pu - 244	Pu - 246	Ra - 223	Ra - 224
Ra - 225	Ra - 226	Ra - 228	Rb - 81	Rb - 83
Rb - 84	Rb - 86	Rb - 87	Rb - 88	Rb - 89
Rb - 90	Rb - 90 m	Re - 186	Re - 187	Re - 188
Rh - 101	Rh - 102	Rh - 102 m	Rh - 103 m	Rh - 104
Rh - 105	Rh - 105 m	Rh - 106	Rn - 219	Rn - 220
Rn - 222	Rn - 224	Ru - 103	Ru - 105	Ru - 106
Ru - 97	S - 35	Sb - 122	Sb - 124	Sb - 125
Sb - 126	Sb - 126 m	Sb - 127	Sb - 129	Sc - 46
Sc - 47	Se - 75	Se - 79	Se - 79 m	Si - 31
Sm - 145	Sm - 146	Sm - 147	Sm - 148	Sm - 151
Sm - 153	Sm - 157	Sn - 113	Sn - 117 m	Sn - 119 m
Sn - 121 m	Sn - 121	Sn - 123	Sn - 125	Sn - 126
Sr - 85	Sr - 87 m	Sr - 89	Sr - 90	Sr - 91
Sr - 92	Ta - 179	Ta - 180	Ta - 182	Ta - 182 m
Ta - 183	Tb - 157	Tb - 158	Tb - 160	Tb - 161
Tc - 101	Tc - 103	Tc - 106	Tc - 95 m	Tc - 97

Tc - 97 m	Tc - 98	Tc - 99	Tc - 99 m	Te - 121 m
Te - 121	Te - 123	Te - 123 m	Te - 125 m	Te - 127 m
Te - 127	Te - 129 m	Te - 129	Te - 131	Te - 131 m
Te - 132	Te - 133	Te - 133 m	Te - 134	Th - 227
Th - 228	Th - 229	Th - 230	Th - 231	Th - 232
Th - 233	Th - 234	Ti - 44	Ti - 45	Ti - 51
Tl - 201	Tl - 204	Tl - 206	Tl - 207	Tl - 208
Tl - 209	Tm - 168	Tm - 170	Tm - 171	U - 232
U - 233	U - 234	U - 235	U - 236	U - 237
U - 238	U - 239	U - 240	V - 48	V - 49
W - 181	W - 185	W - 187	W - 188	Xe - 122
Xe - 123	Xe - 125	Xe - 127	Xe - 127 m	Xe - 129 m
Xe - 131 m	Xe - 133	Xe - 133 m	Xe - 135	Xe - 135 m
Xe - 137	Xe - 138	Xe - 139	Y - 88	Y - 90
Y - 90 m	Y - 91	Y - 91 m	Y - 92	Y - 93
Yb - 164	Yb - 169	Yb - 175	Yb - 177	Zn - 65
Zn - 69	Zn - 69 m	Zr - 100	Zr - 88	Zr - 89
Zr - 93	Zr - 95	Zr - 97	Zr - 98	Zr - 99

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Total design flow through each HEPA filter bank shall not exceed the maximum rated flow rate for the individual HEPA filters multiplied by the number of filters. This does not limit the design flow rate of the stack, just that of the filters.

5) To account for all the radioisotopes that may be affected by a process in which the temperature may be equal to or exceed 100 degrees Celsius, a release factor of one is applied to a gaseous form of Am-241 and Cs-137.

Emission Unit ID: 435

200E P-296H212 001

296-H-212 (CSB)

This is a MAJOR, ACTIVELY ventilated emission unit.

CANISTER STORAGE BLDG (CSB)

Emission Unit Information

Stack Height: 75.00 ft. 22.86 m. Stack Diameter 2.30 ft. 0.70 m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: 38.10 ft/second. 11.61 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	2	double stage, operates in parallel, one HEPA at a time and one in backup mode
	Fan	2	operates in parallel, one fan at a time and one in backup mode

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Continuous

Sampling Requirements The record filter is replaced monthly and analyzed quarterly (either destructive or non-destructive technique) using a gamma spectrometer calibrated to Cs-137.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at CSB involve surveillance and maintenance operations for the safe storage of radioactive containers holding SNF at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of Canister Storage Building, Building 212-H (Replaces NOC 740)	AIR 17-916	8/30/2017	1272

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.64E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The use of the Canister Storage Building (CSB) for storage of spent nuclear fuel (SNF) including Knock Out Pot (KOP) material. The CSB shall consist of load-in and load-out areas, mechanical and electrical support areas, a multi-canister Overpack (MCO) weld/sample station, and a sub grade vault storage area. The SNF and KOP material shall be received in MCOs that shall be shipped in a cask. Receipt of KOP and the remaining SNF MCOs will increase the number of unwelded MCOs at CSB from twelve to twenty-five.

The sub grade reinforced concrete vault area shall accommodate three equal-sized, below grade compartments with each compartment cooled by natural convection and having separate air inlet and exhaust plenums.

Because there is physical separation from the SNF source term to the air space in this below grade vault, there is no control technology or emission monitoring of the exhaust from this area. The physical separation shall consist of the following barriers: MCO and storage tube.

Over the vault shall be a structural steel and metal sided building with heating and ventilation systems, and a material handling machine for use in the handling and movement of MCOs. The air space above the operating deck shall be at a negative pressure with respect to atmosphere during all MCO handling, storage, and monitoring operations. The exhaust from this portion of the building ventilation system shall be filtered by testable high-efficiency particulate air (HEPA) filters and sampled before exhausting through a separate building operating area stack. An operating deck shall separate the sub grade vault from the above grade level working area.

A continuous air emission monitoring system (CAEMS) shall be installed in the process exhaust stack.

There shall be no more than 226 penetration holes in the operating deck in each of the three compartments in the vaulted area. MCOs containing the SNF shall be stored in the 226 vertical steel storage tubes in the north vault (also know as vault 1). Vaults 2 and 3 shall be used for the storage of sealed/immobilized high-level waste.

The steel storage tubes shall prevent migration of radiological contamination and shall be inserted through existing penetrations and extend from the operating deck to the floor of the vault. Access to the interior of the tubes shall be through penetrations in the operating deck. Each tube shall contain no more than two MCOs and be equipped with a shield plug that shall be vented to the operating deck but which can also be isolated.

The function of the MCO shall be to confine, contain, and maintain the SNF in a critically safe array to ensure safe operations and to support processing the 105 K Basins SNF at the Cold Vacuum Drying Facility, processing the Shippingport PWR SNF at the T Plant, and transport to the CSB.

A cover cap shall be welded on top of the MCO covering the MCO shield plug. This shall be performed at the sample and weld station located in the CSB, thus hermetically sealing the SNF contained in the MCO.

The sampling and weld station shall be located at the south end of the CSB operating area. This area shall consist of seven process pits, four feet in diameter and 19 feet 8 inches deep. Two of the pits shall be equipped for MCO gas sampling and for welding the cover caps on the MCOs. Weld inspection and helium leak checking of the seal weld shall also be accomplished here.

An exhaust enclosure shall be provided for confinement around the top of the MCO during sampling and welding. The function of the enclosure shall be to capture any potential airborne contamination. Airflow shall be into the enclosure. An exhaust duct shall run from the enclosure to a fan and through a testable HEPA filter that shall exhaust into the building ventilation exhaust system for the CSB operating area upstream of the building exhaust testable HEPA filters.

The tube vent and purge cart will house the storage tube purge system, which shall monitor and maintain an inert gas environment around any MCO placed in the Overpack storage tubes and to monitor the atmosphere in any of the other storage tubes as required. The vent and purge cart may be driven to any of the 226 storage tubes.

The vent and purge cart equipment shall include inert gas supply cylinders, flexible steel hoses, an airtight sampling connection, a radioactive gas monitor, a hydrogen gas monitor and associated interlocks and alarms, a vacuum pump and its cooling unit, a HEPA filter, and an oxygen monitor and associated alarms.

The heating, ventilation, and air conditioning (HVAC) system shall provide contamination confinement and contamination control within the CSB. The HVAC system shall provide a controlled pressure gradient flow of air from outside the CSB inward through uncontaminated areas to potentially contaminated areas of the building and out through HEPA filters and a monitored exhaust.

Routine (WAC 246-247-30[23]) maintenance, repair or replacement-in-kind activities are required to be performed to ensure reliable operation of the CSB Facility. A portion of these activities can affect the operation of the abatement control and monitoring systems when performed (e.g., power supply testing, confinement barrier repair, mechanically powered drive system maintenance, HVAC maintenance, adjustments to control equipment, filter testing, etc.). Compensatory controls will be implemented as required when these routine activities are performed.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.64E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Ag - 110	1.42E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ag - 110 m	1.07E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 241	1.87E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 242	9.74E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 242 m	9.79E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 243	6.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ba - 137 m	6.25E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
C - 14	8.66E-01	gas	WAC 246-247-030(21)(a)
C - 14	6.90E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cd - 113 m	1.77E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ce - 144	4.57E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cm - 242	8.09E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cm - 244	7.19E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Co - 60	1.98E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 134	7.94E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 135	3.87E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	6.59E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 152	4.72E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 154	5.35E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 155	1.10E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Fe - 55	1.83E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Gd - 153	6.39E-10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

H - 3	3.65E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
H - 3	4.58E+01	gas	WAC 246-247-030(21)(a)
I - 129	6.34E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
I - 129	7.96E-03	gas	WAC 246-247-030(21)(a)
In - 113 m	1.07E-12	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Kr - 85	7.38E+02	gas	WAC 246-247-030(21)(a)
Kr - 85	5.88E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Nb - 93 m	1.23E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Nb - 95	1.87E-17	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Nb - 95 m	6.25E-20	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ni - 59	2.05E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ni - 63	2.24E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Np - 237	2.86E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pd - 107	8.14E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pm - 147	2.31E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pr - 144	4.51E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pr - 144 m	5.50E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	5.55E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239	1.09E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	5.95E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	3.34E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 242	2.74E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Rh - 106	9.09E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ru - 106	9.09E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sb - 124	1.51E-23	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sb - 125	1.67E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sb - 126	1.09E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Sb - 126 m	7.79E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Se - 79	4.31E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sm - 151	8.79E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sn - 113	1.07E-12	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sn - 119 m	1.48E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sn - 121 m	3.98E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sn - 123	8.69E-11	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sn - 126	7.79E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sr - 90	5.05E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Tb - 160	1.38E-20	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Tc - 99	1.44E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Te - 123 m	1.38E-16	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Te - 125 m	4.09E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Te - 127	4.74E-12	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Te - 127 m	4.84E-12	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 234	4.37E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 235	1.68E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 236	6.34E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 238	3.48E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Y - 90	5.05E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Y - 91	1.11E-19	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Zr - 93	2.00E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Zr - 95	8.44E-18	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ag - 110 m	Ag - 110	Am - 241	Am - 242 m	Am - 242
Am - 243	Ba - 137 m	C - 14	Cd - 113 m	Ce - 144
Cm - 242	Cm - 244	Co - 60	Cs - 134	Cs - 135
Cs - 137	Eu - 152	Eu - 154	Eu - 155	Fe - 55
Gd - 153	H - 3	I - 129	In - 113 m	Kr - 85

Nb - 93 m	Nb - 95	Nb - 95 m	Ni - 59	Ni - 63
Np - 237	Pd - 107	Pm - 147	Pr - 144	Pr - 144 m
Pu - 238	Pu - 239	Pu - 240	Pu - 241	Pu - 242
Rh - 106	Ru - 106	Sb - 124	Sb - 125	Sb - 126
Sb - 126 m	Se - 79	Sm - 151	Sn - 113	Sn - 119 m
Sn - 121 m	Sn - 123	Sn - 126	Sr - 90	Tb - 160
Tc - 99	Te - 123 m	Te - 125 m	Te - 127 m	Te - 127
U - 234	U - 235	U - 236	U - 238	Y - 90
Y - 91	Zr - 93	Zr - 95		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) MONITORING REQUIREMENTS: Continuous Ambient Air Sampling

Continuous monitoring must be in place prior to operating. This will include continuous ambient air sampling for this project. The ambient air monitors shall be checked for operability at least once per week, and if an ambient air monitor is found not operating, the ambient air monitor shall be returned to service within seven working days from when it was found not operating. Notification to DOH per (WAC 246-247-080(5)) is required when an ambient air monitor is shut down for more than seven consecutive working days from time of discovery. At that time, i.e. when the ambient air monitor is shut down for more than seven consecutive days from time of discovery, operations involving the handling of spent nuclear fuel shall be suspended until the ambient air monitor is returned to service.

5) DIFFERENTIAL PRESSURE- Monitored and Recorded Daily

The differential pressure shall be monitored and recorded daily during operational rounds to determine impacts due to moisture. If the differential pressures are outside of the designed operating range, the cause will be determined and the department will be notified within 24 hours.

6) TOTAL FLOW NOT TO EXCEED 9,487 CFM

Total system flow shall not exceed 9,487 CFM allowing for the tolerances of the measuring devices unless requalification of the Sample location is performed to allow for a higher flow. In no case may the total system flow exceed the lesser of the designed flow capacity of the HEPA filtered abatement system or the flow which the stack sampling was qualified at.

7) ABATEMENT TECHNOLOGY - Ventilation

Ventilation systems used to control the release of particulate airborne radiological contamination from individual processes must include:

1. MHM cask extract ventilation and HEPA exhaust system.
2. Sampling/weld station ventilation and HEPA exhaust system.
3. Overpack storage tube purge system.
4. Temporary containment enclosure with HEPA exhaust system for contamination control.
5. The building HEPA filters are still required.

8) TOTAL NUMBER OF UNWELDED MCOS STORED-Will not Exceed 25

The total number of unwelded MCOs will not exceed 25.

9) CONDITIONS REQUIRING THE USE OF COMPENSATORY CONTROLS DURING PRE-PLANNED SHUTDOWN OF EMISSION CONTROL AND/OR EMISSION MONITORING SYSTEMS

Work not involving a modification to the emission unit as defined in WAC 246-247-030(16) that may or may not result in periods of pre-planned shutdown of emission control and/or emission monitoring systems not associated with maintenance on those systems require the use of the following Compensatory Controls.

A. Operate facility main exhaust ventilation system and monitoring system for the entirety of the evolution if shutdown of the system is not required to perform the work.

B. If shutdown of either the exhaust ventilation or monitoring system is required then;

i. Avoid work that could disturb any radiological contamination thereby creating fugitive emissions.

ii. No multi-canister overpack handling, moving, sampling or intrusive radiological activities may be performed other than routine surveillances and non-intrusive activities.

iii. Doors controls

a. The "Mega Door" interior to the North vertical lift door and the interior door to the South vertical lift door will be in a closed position when the exterior vertical lift doors are opened. Only one exterior vertical lift door to the operating deck vestibules will be open at one time.

b. The vertical lift doors interior to the rolling slide gate doors are to be closed:

1. Prior to the start of work
2. At the end of the shift
3. When the work is completed
4. During emergency/anomalous situations

c. Radiological surveys (smears) shall be taken for radiological work activities at the telescoping doors leading to the operating deck to confirm no detectable, smearable contamination:

1. Radiological Surveys are not required for non-radiological work activities

d. Records of these surveys shall be included in the work record.

iv. Facility near field monitor (NFM) N481 shall be operating while the covered work is underway. The NFM will be checked weekly to ensure operation. If the NFM is found off, work will stop until the NFM is back in operation and notification will be made to the Washington State Department of Health - Office of Radiation Protection (WDOH)

v. Notifications:

a. The United States Department of Energy (DOE) will notify WDOH at least 7 days prior to start of the work. In the event that the work starts later than the originally notified day, the 7 day notification will will be given with the newly anticipated start date. Notification can take the form of an electronic message.

B. DOE will notify WDOH within 1 working day after completion of work and restart of the emission control and emission monitoring systems. Notification can take the form of an electronic message.

10) DEVIATION FROM THE ANSI 509/510 STANDARD

Deviations to the ANSI 509/510 standard are listed in Appendix E of HNF-7880, Radioactive Air Emissions Notice of Construction Canister Storage Building, Building 212-H and have been approved by AIR 01-711.

Emission Unit ID: 438

200W S-296S023-001

296-S-23

This is a MINOR, ACTIVELY ventilated emission unit.

219-S Building

Emission Unit Information

Stack Height: 21.50 ft. 6.55 m. Stack Diameter 1.00 ft. 0.30 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 42.46 ft/second. 12.94 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	1	
	HEPA	2	In series
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 every 2 years

Sampling Requirements NDA

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is an exhauster that is used to ventilate a hood located in the 219-S Sample Gallery. The hood is used to collect samples from two of the waste tanks located in the 219-S Waste Handling Facility. The emission unit is a hood exhauster ventilation system that operates intermittently.

Emission Unit ID: 439

200W J-CWC 001

Central Waste Complex

This is a MINOR, ACTIVELY ventilated emission unit.

Central Waste Complex

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)		Near field ambient monitoring program as specified in the Conditions and Limitations.

Sampling Requirements Environment Sampling; Ambient air monitors N-449, N-457, N-964, and N-433.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the CWC involve operations in support of waste management at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation and Maintenance of the Central Waste Complex (replaces NOC 654)	AIR 14-908	9/26/2014	922

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.57E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted

The mission of the CWC is the storage of mixed and/or radioactive waste that is generated on or off the Hanford Site. There could be up to 88,500 emission units (i.e., containers) within CWC. CWC manages many categories of radioactive materials such as low-level waste (LLW), transuranic (TRU) waste, TRU mixed waste and low-level mixed waste (LLMW) in contact-handled (CH) containers.

TRU waste is waste that contains at least 100nCi of alpha emitting transuranic constituents with half-lives greater than 20 years. LLW is not TRU waste. TRU waste and LLW are not spent nuclear fuel, high level waste or byproduct material. CH containers are packages are defined having surface dose rates less than 200 mrem/hr while remote handled (RH) containers are packages with dose rates of greater than 200 mrem/hr. RH containers may be stored at the CWC in accordance with the approved safty analysis.

The LLW typically contains rags, paper, rubber gloves, disposal supplies, tools, industrial waste (e.g., failed equipment), and solidified waste that are contaminated with radioactive material. TRU and TRU-mixed waste typically contains rags, paper, rubber gloves, disposable supplies, tools, industrial waste (e.g., failed equipment), solidified process byproducts, and laboratory wastes that are contaminated with TRU material. Both TRU and LLW may contain non-radioactive constituents that could be managed as RCRA and/or TSCA waste.

The TRU waste accepted by CWC may contain varying concentration of TRU radionuclides and limited amounts of non-TRU radionuclides. With some exceptions all based on safety analysis, the TRU content of waste containers is generally limited to fifty three (53) Pu 239/Pu-240 dose equivalent curies (DE-Ci), where the DE-Ci is derived by multiplying the isotopic composition (i.e., weight fractions of the various TRU isotopes) by the specific activities of each isotope, and then converting that number with correction factors taken from the Hanford Site Solid Waste Acceptance Criteria. The DE-Ci unit is designed to control inhalation dose impacts independent of radionuclide type. The radionuclides Pu-239 and Pu-240 are considered equivalent and are combined for calculation purposes and are used to track the unabated emissions. The TRU waste containers are generally equipped with a pressure relief vent device such as the NucFil® filter. This filter allows the release of gases that may be produced as a result of radiolysis inside the container, while preventing release of particulate matter.

The waste storage areas and facilities at CWC include the following:

- Shipping and Receiving Area
- Outdoor Waste Storage Areas
- Flammable & Alkali Metal Waste Storage Modules
- Mixed and/or Radioactive Waste Storage Buildings
- RO/RO containers

As needed, the operational activity at CWC includes overpacking waste containers found to be in unsatisfactory condition. Additionally, there may be future instances where potential radiological contamination associated with the outer surfaces of containers and soils needs to be managed. As discussed in AIR 13-602, Central Waste Complex (CWC) Box 231ZDR-11 As Low As Reasonably Achievable. Control Technology (ALARACT) Approval, a general purpose burial box dripped contaminated water to the soil. Following discovery, the contaminated water was contained in collection containers that are emptied periodically. The ALARACT described actions to be taken to place the container in a configuration that would allow installation of a cover, move the container, and provide for the management of contaminated soil and materials disturbed during the activity (as needed). The ALARACT also identified associated radiological controls, monitoring, and records/documentation. To address potential radiological releases from a container, the cleanup of containers, buildings, equipment, and/or contaminated soil would be performed in a manner that is protective of workers and the environment. To address potential future releases from a CWC waste container, conditions 10 through 14 identify the controls that would be implemented to remediate the radiological release.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.13E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
C - 14		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cm - 243		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cm - 244		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Co - 60		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cs - 137		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
DE - 0	9.38E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Alpha release rate is assumed to be Pu 239/249. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha constituents.			

Eu - 154	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 155	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 59	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 63	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 242	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 126	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Cm - 243	Cm - 244	Co - 60
Cs - 137	Eu - 154	Eu - 155	Ni - 59	Ni - 63
Pu - 238	Pu - 239	Pu - 240	Pu - 241	Pu - 242

Se - 79	Sm - 151	Sn - 126	Sr - 90	Tc - 99
U - 233	U - 234	U - 235	U - 236	U - 238
Zr - 93				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) WDOH NOTIFICATION- Contamination Levels
WDOH will be notified when the following contamination levels are found:
-Direct contamination on soil, container, or adjacent surfaces is detected greater than 500,000 dpm/100 cm^2 alpha and/or 1 rad/hr/100 cm^2 beta gamma are encountered.
-Removable/transferrable contamination levels above 2,000 dpm/100 cm^2 alpha or 100,000 dpm/100cm^2 beta-gamma are encountered. (WAC 246-247-040((5))

5) WDOH NOTIFICATION & IMPLEMENTATION OF CONTROLS-Contamination Levels
Removable/transferrable contamination will be maintained less than a maximum level of 2,200,000 dpm/100 cm^2 alpha and/or less than 4 rad/hr/100 cm^2 beta gamma.
Direct contamination levels will be maintained less than a maximum of 20,000dpm/100cm^2 alpha, and or 1,000,000dpm/100cm^2 beta-gamma
Exceeding these contamination limits requires work to stop and WDOH notification.
The following appropriate controls must then be implemented prior to resuming work:
-Contamination will be secured or contained prior to continuing work.
-Appropriate controls such as water, fixatives, covers, containment tents, or windscreens shall be applied.
-Soil shall be wetted prior to removal if not already damp.
-If soil is to be removed such as during excavation activities, it would be fixed or covered until excavated or otherwise dispositioned.
-General work place air monitoring shall be performed during removal activities.
-Removed soil or vegetation not already in containers will be covered with plastic, fixative applied at the end of each shift, and/or the material will be covered as necessary to prevent airborne dust particles.
(WAC 246-247-040(5))

6) ABATEMENT- Drum Vents
TRU drum and box waste containers shall be equipped with passive vents, either vent clips, NucFil® filters, or similar devices. Vent clips will be replaced with NucFil® filters or similar devices as containers are prepared for shipment either to the Waste Isolation Pilot Plant (WIPP) or transferred to other locations onsite. (WAC 246-247-040(5))

7) ABATEMENT-NucFil® Filters or Similar Device
A NucFil filter or similar device may be constructed with a variety of filter media (e.g. a porous carbon/carbon composite or sintered 316 SS metal) housed in stainless steel. At a minimum, the NucFil filter or similar device shall restrict the release of 99.95% of particles with a mean 0.3 microns in size. (WAC 246-247-040(5))

8) ABATEMENT-PermaCon
A PermaCon modular containment unit may be placed in select, existing CWC buildings for the purpose of sampling the head space gas within solid waste storage containers. Such buildings would have roof mounted exhausters, rated at a minimum of 16,000 cubic feet per minute. (WAC 246-247-040(5))

9) 9) ABATEMENT-Roll-on/Roll-off (RO/RO) Containers
RO/RO containers are commercially-available, open-top dumpsters. They may be used for storage/disposal of LLW generated on the Hanford Site from routine maintenance and surveillance activities (e.g., rags, paper, rubber gloves, disposal supplies, tools, industrial waste potentially contaminated with radioactive material). For routine activities, the waste is placed in plastic on location, and the plastic is secured (e.g., taped close).
- the bagged waste shall be transported to the CWC and stored in a RO/RO.

-A maximum of four (4) RO/RO containers may be generated per year for waste streams associated with routine maintenance and surveillance activities.
-The containers could be located anywhere within the CWC fenced area.
-The filled containers shall be transported to ERDF for disposal.

The RO/RO containers may also be used in support of the management of contaminated soil and materials disturbed during the cleanup of containers, buildings, equipment, and/or contaminated soil (i.e. non-routine activities). The RO/RO container is located adjacent to the waste generation site and non-routine activity waste is loaded directly into the container.
-Prior to the use of RO/RO containers for non-routine cleanup activities, WDOH shall be notified of the anticipated waste volumes, radiologic contamination levels and any radiological controls required beyond those specified in the license.
-There is no maximum limit on the number of RO/RO containers that can be used for waste streams associated with non-routine activities.
-The containers could be located anywhere within the CWC fenced area.
-The filled containers shall be transported to ERDF for disposal. (WAC 246-247-040(5))

10) ABATEMENT-Additional Controls for Spill or Release
In the event that a spill or release of contamination associated with a waste container is discovered, additional controls will be implemented
-During work activities, continuous radiological control technician (RCT) coverage will be provided .
-Alpha and beta-gamma contamination surveys will be performed prior to and during cleanup activities that have the potential to disturb radioactive contamination such as soil disturbance and box covering. (WAC 246-247-040(5))

11) ABATEMENT- Wind Speeds-Stop Work
In any Contamination Area (CA), High Contamination Area (HCA) or Airborne Radioactivity Area (ARA), cleanup activities involving dispersible contaminated material shall stop if average wind speeds exceed 10 miles per hour (mph) for elevated work or 20 mph for ground level work, as measured at the site. (WAC 246-247-040(5))

12) ABATEMENT- Misters-fixatives
-Hand-held and/or over-head atomized misting will be performed during work activities where a potential exists to generate airborne radioactivity. `
-Atomized misters and fixative sprayers shall be function-checked at the work site prior to commencing work activities. (WAC 246-247-040(5))

13) ABATEMENT-Related Approvals
If a truck-mounted vacuum (i.e., GuzzlerTM) Portable/Temporary Radioactive Air Emission Units (PTRAEU), or HEPA filtered vacuum radioactive air emission unit is used, controls as described in the Hanford Site Radioactive Air Emissions License #FF-01, for the Sitewide GuzzlerTM NOC (Emission Unit ID: 476), the PTRAEU NOC (Emission Unit ID: 447), and the Hanford Sitewide W PORTEX 007 [HEPA vacuums] NOC (Emission Unit ID: 455), respectively, would be followed. (WAC 246-247-040(5))

14) ABATEMENT-Soil Removal
-During and after removal of radiologically-contaminated soil, soil surface radiological contamination levels shall be verified.
-If contamination is present >500,000 dpm/100cm^2 beta-gamma or >10,000 dpm/100cm^2 alpha:
  o Additional soil shall be removed and containerized for disposal
  o Soil shall be containerized, fixed or covered if it is to be left for greater than 48 hours
(WAC 246-247-040(5))

15) INVENTORY TRACKING-Container Inventory
Container inventory tracked (logged) in the SWITS database and available for audits. (WAC 246-247-040(5)

16) TRACKING-Activity Log
The facility must maintain a log in an approved format (SWITS database) for this activity or emission unit. (WAC 246-247-040(5))

17) HOUSEKEEPING
Decontamination and/or replacement of leaking containers shall be performed as needed.
Frequent smears throughout the CWC will be used to ensure that the emission control equipment is working properly.
-Smears that exceed 20 dpm/100 cm^2 for alpha and 1,000 dpm/100 cm^2 for beta/gamma contamination will be

investigated to determine the cause of the contamination and appropriate corrective actions shall be implemented. (WAC 246-247-040(5))

18) MONITORING-Periodic Confirmatory Sampling
Periodic confirmatory sampling is required. It must consist of: sampling quarterly using a portable sampler for a two-week interval inside the CWC building (excluding outdoor pads) containing vented containers with the highest cumulative inventory of DE curies during the quarter sampled. (Samples will be handled following the applicable sections of 40 CFR 61, Appendix B, Method 114.) (WAC 246-247-040(5))

19) MONITORING- Ambient Air Monitoring Network
The 200 Area near-facility ambient air monitoring network shall be used for continuous monitoring. Ambient air monitors N-449, N-457, N-964, and N-433 are maintained as monitors for CWC diffuse/fugitive emissions. These monitors shall provide indication of potential elevated airborne radioactivity using the same frequency and protocol of the Hanford Site Near-Facility Environmental Monitoring Program.
(WAC 246-247-040(5))

20) CONTINUOUS MONITORING- Chain of custody
Air sample data shall be analyzed by contracted Laboratory and ABCASH data shall available to WDOH. The chain of custody shall be the same as for the 200 Area near-facility ambient air monitoring network.
(WAC 246-247-040(5))

21) NEW RADIONUCLIDE ASSESSMENT
Washington State Department of Health (WDOH) recognizes that the CWC facility may encounter any radionuclide during their normal operations. Notwithstanding the radionuclides and limits listed in condition 3, additional radionuclides may be possessed subject to the following evaluation and notification requirements. If a new radionuclide is identified that is not listed in the license, a written notification will be made to WDOH. An assessment will also be made to determine if the radionuclide contributes greater than 10% of the PTE or greater than 0.1 mrem TEDE to the MEI or greater than 25% of the TEDE to the MEI after abatement controls. The assessment and notification will be made within 30 days of identifying the new radionuclide (WAC 246-247-060(5))

Emission Unit ID: 443

300 Area Emissions

300 Area Diffuse/Fugitive

This is a MINOR, FUGITIVE, non-point source emission unit.

300 Diffuse/Fugitive Emissions

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Administrative Controls		Abatement controls as required in the following Conditions and Limitations.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program

Sampling Requirements Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Associated with emissions from operations, deactivation, surveillance and maintenance in the 300 Area from sources not actively ventilated.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
300 Area Excavation Activities (Replaced NOC 684)	AIR 12-302	2/23/2012	811

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.70E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   This license is limited to the excavation in the vicinity of 300 Area structures and facilities in support of site stabilization, site infrastructure, and removing/isolating/blanking/routing/re-routing utilities; obtaining samples during 300 Area deactivation activities; and activities related to access for surveillance and maintenance, replacement-in-kind, and non-radiological equipment. Excavation may be conducted with mechanical methods such as an excavator or by drilling. Manual digging methods with shovels, picks, and rakes may also be used. Samples may be obtained by excavation or other coring or drilling methods. Backfill shall be made with the original material removed or brought in 'clean' soil.

   This license does not incorporate specific large remediation actions or final cleanup in the context of Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.70E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Beta - 0	4.30E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Sr - 90 U - 234

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) The radionuclide's of concern are strontium-90 (representing beta/gamma contamination during excavation, and uranium-234 (representing alpha contamination). Any fission product may be present, though all are conservatively represented by the isotopes specifically identified.

5) When a Portable/Temporary Radioactive Air Emission Unit (PTRAEU) is used during 300 Area excavation activities, the conditions, controls, monitoring requirements and limitations of the PTRAEU NOC, latest approved version, shall be required.

6) When the sitewide Guzzler is used during 300 Area excavation activities, the conditions, controls, monitoring requirements and limitations of the sitewide Guzzler NOC, latest approved version, shall be required.

7) The following controls are approved as low as reasonably achievable control technology (ALARACT) for excavation activities in the 300 Area:

a) Health physics coverage shall be provided during all excavation activities;

b) Appropriate controls such as water, fixatives, covers, containment tents, or windscreens shall be applied, if needed, as determined by the health physics personnel;

c) After leveling, the soil surface radiological contamination levels shall be verified less than 5,000 dpm/100 cm^2 beta/gamma and less than 100 dpm/100 cm^2 alpha. If contamination is present above these levels, soil shall be removed and containerized for disposal or covered or fixed to provide containment of the contamination;

d) As appropriate, before starting work on isolating utilities and piping, removable contamination in the affected area(s) shall be reduced to ALARA. Measures such as expandable foam, fixatives, or glovebags shall also be used as necessary to help reduce contamination;

e) If field surveys during excavation identify localized areas of contamination greater than 5,000 dpm/100 cm^2 beta/gamma and 100 dpm/100 cm^2 alpha, additional surveys shall be conducted on the perimeter of the 'hot spot' to verify the localized nature, ensuring that the overall average contamination limits are not exceeded;

f) Excavated soils will be stockpiled in appropriately posted area(s) adjacent to excavation locations;

g) Soil stockpiles that are inactive for greater than 24 hours shall require positive dust control measures be applied;

h) All soil excavation activities operating under this NOC must cease operations when sustained wind conditions reach or exceed 20 miles per hour.

8) The periodic confirmatory measurements for 300 Area excavation activities shall consist of radiological surveys (smear samples). To confirm that the actual emissions remain below the estimated emissions the surveys shall be

performed to demonstrate that contamination levels are below 5,000 dpm/100 cm^2 beta/gamma and 100 dpm/100 cm^2 alpha.

Clarification:

The estimated emissions are based on the amount of curies present if all the soil excavated was contaminated to 5,000 dpm/100 cm^2 beta/gamma and 100 dpm/100 cm^2 alpha (based on smear surveys). It is expected that the entire inventory of soil during excavation will not be contaminated to the levels used in the estimated emissions calculation, and there may be localized "hot spots" above these levels. The radiological surveys will be used to calculate and track that the estimated release rates of 1.00 E-04 curies of alpha and 4.3 E-03 curies of beta are not exceeded. Transferable contamination surveys are the functional equivalent of smear surveys.

9) When a HEPA Filtered Vacuum Radioactive Air Emission Unit (HEPA VAC) is used during 300 Area excavation activities, the conditions, controls, monitoring requirements and limitations of the HEPA VAC NOC, latest approved version, shall be required.

Emission Unit ID: 447

Hanford Sitewide type-1, type-2, type-3

type-1, type-2, type-3

This is a MINOR, ACTIVELY ventilated emission unit.

PTRAEU

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Type-1
	HEPA	1	Type-2 and Type-3
	Charcoal filter	1	Type-2 and Type-3

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114	GROSS ALPHA/BETA	Annual, unless specified by the NOC.

Sampling Requirements One of the following methods may be chosen for actual emissions reporting: nondestructive assay, record sampler, smears of the exhaust port or continuous air monitoring, whichever is more appropriate.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations using PTRAEUs involve mobile filtration, sample preparation, screening and analysis units, and ventilation of operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Portable/Temporary Radionuclide Airborne Emissions Units (PTRAEU)(Replaces NOC 837)	AIR 17-114	1/9/2017	1074

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 9.80E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Type I PTRAEUs are portable ventilation-filter units. Type II PTRAEUs are mobile sample preparation units. Type III PTRAEUs are mobile screening and analysis units. Each type of PTRAEU is described in the following paragraphs.

Most of the PTRAEUs are portable ventilation-filter units (Type I) with a capacity from approximately 50 to 2,000+ cubic feet per minute exhaust flow rate. The portable ventilation-filter units control radionuclide emissions by providing filtered ventilation on sites where work activities potentially could disturb areas with radioactive contamination. Type I units that are vacuums are listed to be used as ventilation units. If the vacuum is used in any other manner/process, the Washington State Department of Health (Department) must approve its use under separate application before the activity commences.

Mobile sample preparation units (Type II) decrease the chance of unintentional cross-contamination of samples and enhance personnel radiological safety. The sample preparation units enable technicians to remove material from core barrels, homogenize the material, and fill prescribed sample containers for onsite and offsite analysis. In enclosed, self-contained sample preparation units, radiological exposure and

interference from environmental conditions (i.e., wind, precipitation, and exhaust fumes) are minimized.

Mobile sample screening and analysis units (Type III) provide preliminary screening of samples to determine potential problem areas at a site. The units also screen samples to identify those samples requiring further in-depth analysis. Screening samples decreases the number of samples transported for analysis. The fast turnaround analysis time can provide results for a field situation requiring expeditious response.

The source of radionuclides handled by the mobile sample preparation facilities and mobile screening and analysis facilities is contaminated soils and/or liquids extracted from cribs, ditches, ponds, burial sites, and other such areas with surface soil contamination. An additional source of radionuclides is preparation of radioactive standards to be used for instrument calibration.

MANAGEMENT OF RADIOACTIVE CONTAMINATION DURING ROOF REPLACEMENT ACTIVITIES AT FACILITIES ON THE CENTRAL PLATEAU

All work shall be performed in accordance with written contractor radiological control requirements (associated with posting and down posting requirements for doing work in outdoor contamination areas and fixed contamination areas) and the as low as reasonably achievable (ALARA) program requirements. These requirements are to be carried out through activity work packages/procedures and associated radiological work permits.

Types of facilities allowed to use this NOC are active and operational, currently in surveillance and maintenance (S&M) mode, or in transition to S&M mode.

Activities are non-routine activities that have a potential to create a new temporary emission source and/or a modification of a source(s) of diffuse and fugitive emissions at facilities on the Central Plateau.

Screening Surveys

Roof replacement activities include radiological surveys to determine if radioactive contamination is present and the extent of such contamination. Spot contamination (e.g., bird droppings) managed before commencement of roof replacement work is handled per existing methods and is considered a routine housekeeping activity (similar to spot contamination found at ground levels).

Managing Radioactive Contamination

Contaminated roofing materials may be removed by manual or powered methods, including saws or other cutting devices, shovels, wheelbarrows, conveyors, chutes, or other similar equipment (conveyors or chutes may be used only for packaged radioactive waste or for non-contaminated roofing material). Radioactive waste shall be managed in accordance with existing onsite requirements and waste acceptance criteria. Radioactive waste either shall be containerized in drums, skiffs, boxes, or other containers, or handled as bulk waste (e.g., dump truck) and transferred to the appropriate disposal facility. Management of radioactive contamination is allowed to include removal and subsequent size reduction of contaminated equipment from a roof as well as isolation and blanking of utilities, vents, and ductwork.

Accumulated rainwater that has contacted contamination areas shall be allowed to evaporate in place or is characterized, collected, and managed in accordance with storm water discharge requirements or transferred to an appropriate disposal facility.

A graded approach is allowed to be used to match controls with expected contamination levels per radiological control manuals and methods. Radiological contamination that is encountered will either be managed as a fixed contamination area (i.e., less than 20 dpm/100 cm2 smearable alpha and less than 1,000 dpm/100 cm2 smearable beta) or will be managed as a contamination area (radiological contamination levels are between 20 and 2,000 dpm/100 cm2 alpha or between 1,000 and 100,000 dpm/100 cm2 beta) using appropriate controls to minimize worker exposure. These controls include water for dust suppression, fixatives, covers, windscreens, or greenhouses (with PTRAEU exhausters) that will be applied, if needed, as determined by the licensees health physics organization, and consist of ALARA techniques.

Process descriptions and abatement controls, as described in the latest approved revisions of the Guzzler NOC (99-SID-021), the PTRAEU NOC (DOE/RL-96-75), or the HEPA Vacuum NOC (DOE/RL-97-50) shall be used; however, the activity-specific operational controls and tracking requirements shall follow these approval conditions. The Guzzler, PTRAEU, and HEPA vacuum units shall have a removal efficiency of 99.95% for radioactive airborne particles.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.80E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0

Sitewide PTRAEU Release rates are not listed; emission release rates are controlled by special conditions.

Alpha - 0	1.50E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Roof Replacement Activities Involving Radioactive Contamination at Facilities on the Central Plateau License PTE limit bounds 1.5E-04 Ci/yr 241Am and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during roof replacement activities. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 241Am and all beta/gamma is assumed to be 137Cs for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents

B/G - 0	7.50E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Roof Replacement Activities Involving Radioactive Contamination at Facilities on the Central Plateau License PTE limit bounds 7.5E-03 Ci/yr 137Cs and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during roof replacement activities. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 241Am and all beta/gamma is assumed to be 137Cs for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

B/G - 0

Sitewide PTRAEU Release rates are not listed; emission release rates are controlled by special conditions.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241 Cs - 137

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) SITEWIDE PTRAEU-REPORTING-NDA Request, Reporting Methodology
The Department reserves the right to request an nondestructive analysis/assay (NDA) after each exhaust job assignment (WAC 246-247-075(3)). The monitoring includes: emission estimates to include the methodology, all monitoring measurement results taken during the operation, copy of all logs submitted to the Department on June 30th. One of the following methods may be chosen for actual emissions reporting: nondestructive assay, record sampler, or continuous air monitoring, whichever is more appropriate.

5) SITEWIDE PTRAEU-CONTAMINATION CONTROL-Routine Checks
Ductwork, seams, and potential release locations on the portable exhausters are to be monitored on a routine basis for potential radionuclide releases and noted on the log sheets (e.g., post survey results negative). These routine checks should be kept as retrievable records.

6) SITEWIDE PTRAEU-RECORDS-Daily Use Calculated
The required possession quantity is RHL's calculated for a daily use because many of the activities are of short duration. In calculating the RHL's, 0.1 mrem per year criteria will be used as a beginning point and the source term, which can be handled each day, is back calculated.

7) ROOF REPLACEMENT ACTIVITIES INVOLVING RADIOACTIVE CONTAMINATION AT FACILITIES ON

THE CENTRAL PLATEAU - REPORTING-Isotopes of Concern
For dose modeling, the radionuclides of concern shall use Cs-137 (representing beta/gamma emitters) and americium-241 (representing alpha emitters).

8) ROOF REPLACEMENT ACTIVITIES INVOLVING RADIOACTIVE CONTAMINATION AT FACILITIES ON THE CENTRAL PLATEAU -REPORTING-Department Approved Log
The total radionuclide content of the material removed shall be tracked on a Department approved log.

Emission Unit ID: 448

Hanford Sitewide Vented Containers

Vented Containers

This is a MINOR, PASSIVELY ventilated emission unit.

PTRAEU

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	Air - every 2 weeks continuous/deposition - annually

Sampling Requirements Environment Sampling

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for vented containers involve storing, surveillance and monitoring operations on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Sitewide Vented Container Storage	AIR 07-701	7/2/2007	641

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.40E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Containers are used to store mixed and/or radioactive waste generated on and off the Hanford Site. Venting devices are installed when there is the potential for non-radioactive gases (i.e., hydrogen) to be generated as a result of radiolysis.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.00E-01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

   Release rates are not listed; emission release rates are controlled by special conditions.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Containers other than drums are also approved if they meet the conditions of this NOC.

5) Establishes a categorical As Low As Reasonably Achievable Control Technology (ALARACT) demonstration for existing Hanford Site vented containers.

6) Establishes a categorical Best Available Radionuclide Control Technology (BARCT) demonstration for all future Hanford Site vented containers (i.e., up to 6667 vented container units (UVC) based on a total abated emissions offering less than 3.4E-05 mrem/year to the MEI). (WAC 246-247-040 (5))

7) NucFil(TM) filter or an equivalent filter shall be BARCT and ALARACT. Vent clips are accepted as ALARACT for existing systems to date, however, when conditions require repackaging vent clips shall be replaced by NucFil(TM) or equivalent filters.

8) Pu239/240 equivalent curies (PE-Ci) represents the radionuclide of concern as discussed in the Hanford Site Solid Waste Acceptance Criteria, HNF-EP-0063.

9) The vented container Latitude and Longitude coordinates (46 degrees 22' 13.8", 119 degrees 16' 12.3") refer to the location resulting in the highest impact to the MEI.

10) These containers are used for storing mixed and or radioactive waste generated on or off Hanford Site.

11) WDOH accepts vent clips as ALARACT since they are no longer installed.

Emission Unit ID: 454

200 200 Area ISA

200 Area Interim Storage Area (ISA)

This is a MINOR, ACTIVELY ventilated emission unit.

200 diffuse/fugitive emissions

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)			Annual

Sampling Requirements Smear Survey

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at the 200 Area ISA are for interim dry storage of SNF materials on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Construction and Operation of the 200 Area Interim Storage Area (ISA)	AIR 06-1015	10/5/2006	650

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.92E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   The construction and operation of the 200 Area ISA. The 200 Area ISA will be constructed and operated for the interim storage of non-defense production reactor SNF in dry cask storage systems (DCSSs). [Note: Dry cask storage system is a generic term referring to the various storage systems employed for SNF storage at the 200 Area ISA and does not refer to a specific storage system.]

   Dry Cask Storage System Interim Storage

   Once the DCSSs are prepared for interim storage the systems can be transferred to the 200 Area ISA for interim storage. Up to sixty Interim Storage Casks (ISCs) storing FFTF SNF, 7 NAC-1 casks storing LWR SNF, and 12 NRF TRIGA casks and 2 DOT-6M containers storing TRIGA<tm> SNF will be required for storage at the 200 Area ISA. Each of the dry cask storage systems will be transported via road to the 200 Area ISA and unloaded using a mobile crane. Each DCSS will be placed at a specific location within the 200 Area ISA.

   Dry Cask Storage System Equipment

   Different DCSSs are utilized for the different SNF types to be stored at the 200 Area ISA to accommodate the particular characteristics of the SNF. The FFTF SNF DCSS, the NRF TRIGA SNF DCSS, and the LWR SNF DCSS.

   200 Area ISA Design and Construction

The 200 Area ISA consists of concrete pads, perimeter fencing and lighting, access for transporters and mobile cranes, and conduit for potential future electrical service and instrumentation. This construction will not involve contaminated items. The 200 Area ISA will be situated within the current CSB construction site. This site is currently not a radiological area nor does it contain an underground radioactive material area. No contaminated excavation will be involved.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.92E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	2.65E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 242	1.11E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 242 m	1.12E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ba - 137 m	1.18E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
C - 14	5.75E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ce - 144	1.92E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cm - 242	1.21E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Co - 60	1.07E+03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 134	1.56E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	1.25E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 154	3.30E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 155	1.21E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Fe - 55	1.01E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
H - 3	3.62E+00	gas	WAC 246-247-030(21)(a)
I - 129	3.07E-04	gas	WAC 246-247-030(21)(a)
Kr - 85	3.07E+01	gas	WAC 246-247-030(21)(a)
Mn - 54	9.55E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ni - 63	9.18E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Np - 237	1.15E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pm - 147	9.64E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pr - 144	1.92E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	1.30E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Pu - 239	5.56E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	4.81E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	1.79E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Rh - 106	5.51E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ru - 106	5.51E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sb - 125	1.21E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sm - 151	5.15E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sr - 90	4.55E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Tc - 99	1.83E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Te - 125 m	2.95E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 235	9.70E-12	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 238	1.01E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Y - 90	4.55E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 242 m	Am - 242	Ba - 137 m	C - 14
Ce - 144	Cm - 242	Co - 60	Cs - 134	Cs - 137
Eu - 154	Eu - 155	Fe - 55	H - 3	I - 129
Kr - 85	Mn - 54	Ni - 63	Np - 237	Pm - 147
Pr - 144	Pu - 238	Pu - 239	Pu - 240	Pu - 241
Rh - 106	Ru - 106	Sb - 125	Sm - 151	Sr - 90
Tc - 99	Te - 125 m	U - 235	U - 238	Y - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Any detectable contamination above 2200 dpm/100 cm ^2 Beta-Gamma or 220 dpm/100 cm^2 Alpha as a result of the ISA specific monitoring shall be reported to the department.

5) Periodic confirmatory monitoring shall consist of annual smears or swipes of the outer surfaces of the containers using hand held survey instruments capable of detecting contamination above 2200 dpm/100 cm ^2 Beta-Gamma or 220 dpm/100 cm^2 Alpha.

6) The emission limit for this emission unit is no smearable contamination above 2200 dpm/100 cm ^2 Beta-Gamma or 220 dpm/100 cm^2 Alpha using standard portable instruments used, and survey methods followed at Hanford

(WAC 246-247-040(5)).

Emission Unit ID: 455

Hanford Sitewide W-PORTEX 007

HEPA vacuums

This is a MINOR, ACTIVELY ventilated emission unit.

PTRAEU

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)			

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operation of HEPA vacuums involve reduction of smearable and fixed contamination and evacuation of enclosures at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
HEPA Filtered Vacuum Radioactive Air Emission Units (HVU)(Replaces NOC ID 663)	AIR 17-113	1/9/2017	1034

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.50E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   The use of specified HVUs located and operated on the Hanford Site, and represents establishment of unregistered, portable and temporary, insignificant emission units.

   For the purposes of estimating (modeling) offsite exposures for this application, all applicable HVU emissions at an individual facility (e.g., B Plant Complex, C Tank Farm, SX Tank Farm, T Plant Complex, 100-K East Basin, 100-K West Basin, 324 Building, 340 Complex, etc.) or activity (e.g., D&D of a building) will be considered as a single emission point for that facility.

   HVUs are portable cleaners with exhaust flow rates ranging from 50 to 300 cubic feet per minute. The units control radionuclide emissions by providing filtered vacuuming for surfaces that radioactively are contaminated.

   HVUs fall into two categories of use, those used for the reduction of smearable contamination and those used to reduce fixed contamination. For smearable contamination, the use of HVUs is limited to reduction of contamination on hard surfaces (e.g., concrete, permanently installed metal equipment such as risers, ventilation system components, piping, etc.). Soil matrices are excluded from this NOC. Smearable contamination on these hard surfaces will not exceed limits established in DOE/RL-96-109. These limits, if exceeded, require the affected area to be posted as a high contamination area. The limits are 2,000 disintegrations per minute per 100 square centimeters (dpm/100 cm2) alpha contamination and 100,000

dpm/100 cm2 beta/gamma contamination.

An exception to these limits is restricted to spot surface contamination areas found during outdoor radiological field surveys, and to clean up localized, radiologically contaminated material (e.g., dust, dirt, bird droppings, animal feces, insects, spider webs, tumbleweed fragments, etc.). These types of materials could have beta/gamma contamination levels exceeding 1 million dpm/100 cm2, but are very localized (i.e., a few square meters, rather than hundreds of square meters) and could occur in contamination areas, buffer zones, and clean zones. This exception does not apply to areas normally posted as high contamination areas.

The second category of use is for reduction of fixed contamination, involving the removal and/or penetration of contaminated surfaces. This category of use includes using HVUs and associated shrouded tools for sanding, stripping, spalling, drilling, and cutting operations. Limits in areas of fixed contamination to ensure compliance will be established before these tools are used.

Roof replacement activities involving radioactive contamination at facilities on the central plateau include radiological surveys to determine if radioactive contamination is present and the extent of such contamination. Spot contamination (e.g., bird droppings) managed before commencement of roof replacement work is handled per existing methods and is considered a routine housekeeping activity (similar to spot contamination found at ground levels).

Transuranic waste retrieval involves the processes for removing and dispositioning buried suspect transuranic mixed low-level radioactive waste (hereafter called TRU waste) from Hanford Site burial trenches for storage or disposal at other approved locations. Dispositioning is the orderly administration and handling of waste (including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys. In addition there are 3 types of drum venting systems and HEPA-filtered Vacuum Units (HVU) used with these venting systems and also during excavation and retrieval.
See the following emission units for a detailed description of additional controls/conditions and limits associated with this activity:
•EU 486 200 Area Diffuse/ Fugitive
•EU 755 Mobile Drum Venting System (Active Ventilation) (MDVS)
•EU 756 Mobile Drum Venting System (Passive Ventilation) (MDVS)
•EU 1181 Categorical Drum Venting System 2 (DVS2)
•EU 1322 Portable Enclosure System #1 (PES)
•EU 1326 Vapor Extraction System (VES)
•EU 1327 Next Generation Retrieval (NGR)

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.97E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	2.29E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate for 300 Area, emission calculation will assume Pu-239/240.			
Alpha - 0	3.44E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate for 400 Area, emission calculation will assume Pu-239/240.			
Alpha - 0	3.09E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate for 100 Areas, emission calculations will assume Pu-239/240			
Alpha - 0	4.57E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate for 200 East Area, emission calculation will assume Pu-239/240			
Alpha - 0	7.70E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate for 200 West Area, emission calculation will assume Pu-239/240.			
B/G - 0	3.88E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
B/G release rate for 200 West Area, emission calculations will assume Sr-90.			
B/G - 0	1.16E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
B/G release rate for 300 Area, emission calculations will assume Sr-90.			

B/G - 0	1.74E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
B/G release rate for 400 Area, emission calculations will assume Sr-90.			
B/G - 0	1.56E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
B/G release rate for 100 Areas, emission calculations will assume Sr-90.			
B/G - 0	2.30E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
B/G release rate for 200 East Area, emission calculations will assume Sr-90.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) REPORTING-Quarterly Log Submittal
For roof replacement: The total radionuclide content of the material removed shall be tracked on a WDOH approved log. FOR HVU: All HEPA vacuum logs shall be submitted to the Department on a quarterly basis (beginning with the first quarter of 2002). This submittal shall be to the Department 30 days after the end of each quarter.

5) MONITORING-NDA On Request, Monitoring Report Requirements
Monitoring requirements are as follows: In the event that the exhauster is used on different emission units, the Department reserves the right to request a nondestructive analysis/assay (NDA) after each exhaust job assignment (WAC 246-247-075(3)). The monitoring includes: emission estimates to include the methodology, all monitoring measurement results taken during the operation, copy of all logs kept on site and the summary submitted to the Department on June 30th.

Log sheets will include the following information:

•Results of smears on the exhaust ports;
•Maximum contamination level encountered or analysis results;
•Area cleaned; and
•Air emission source constituents if other than Pu-239 and Sr-90 potential radionuclide releases

6) ABATEMENT CONTROL-HVU Categories
The approved process is as follows: The HVUs fall into two categories. The first category is the use if the HVUs for the reduction of smearable contamination (including the special cases listed in Appendix C) and the other is to reduce fixed contamination. Soil matrices are excluded from this NOC.

7) REPORTING-Annual Testing
The required controls are described as follows: The HVUs must be field tested annually requiring an aerosol test/efficiency test or equivalent pass/fail criteria of 95.95% using an aerosol defined in ASME N-510 or approved equivalent. In addition, the HVUs filtration systems are to be tested whenever the configuration is modified and/or the filtration system is opened. A smear of the exhaust port shall be conducted before and after each use of HVUs. If the exhaust port smear is positive, the unit shall be tagged and removed from service.

8) TRU HVU USE-CONTAMINATION CONTROL-HVU Removable Contamination
HVU will not be used in high contamination areas where removable contamination limits of 2000 dpm/100 square cm alpha and/or 100,000 dpm/ 100 square cm beta/gamma on hard surfaces have been exceeded.

9) TRU HVU USE-CONTAMINATION CONTROL-Soil Excavation Near Containers

Manual methods or HVU will be used to excavate soil in close proximity to containers.

10) TRU HVU USE-ABATEMENT TECHNOLOGY-Dart System and Other Venting Systems
The Dart System is designed to insert a non-sparking Nucfil® or equivalent filter or sample port remotely and nearly instantaneously (insertion time in milliseconds), even if the container is pressurized. Containers that already have vents installed may have Nucfil® or equivalent filter sample ports installed (allowing subsequent Head Space Gas Sampling collection) without creating a new pathway for potential emissions. Sample ports may be installed in drums with existing vent devices using the Dart System at the Low Level Burial Grounds (LLBG.) The two box venting systems use different approaches to venting boxes. The first system uses a passive HEPA filter to contain potential contamination that might be expelled from a box during the initial drilling. The glovebag will have ports to check for contamination, and if detected will have the capability of connecting a HVU in order to exhaust the glovebag after the filter has been installed. In this situation, a primary HVU provides contamination control during the disassembly of the glovebag.

The second box venting system uses a portable venting system that uses air to drive a remotely operated drill motor. The glovebag associated with this system will use an HVU to maintain negative pressure in the glovebag and effectively exhaust the air from the drill motor and drilling action. The glovebag will have ports to check for contamination and hazardous gases after venting. This box venting system will be secured to the box with tie down straps during the venting operation.

11) APPROVED RELEASE FRACTION-HVU Usage
HVU use is assumed to provide 2% of the total unabated dose rates for manual excavation, but a release fraction of 1.0 is used instead of the 1.0 E-3 release fraction used for manual excavation. This alternative release fraction is approved as being conservative for this emission unit.

12) TRU HVU USE-PROCESS DESCRIPTION-Venting of Containers
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

All work will be performed to meet ALARA practices and will be conducted according to applicable operating procedures, radiological control procedures, and radiological work permit (RWPs).
Vent filters will continue to be installed in designated containers via one of the drum venting systems described in this process description. These systems will ensure personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid or puncturing the lid with a filter dart (using Dart System). Container venting systems are described in the following text. Designated drums slated for venting will be vented with the Mobile Drum Venting System (MDVS), Drum Venting System 2 (DVS2), or other venting methods.

13) TRU HVU USE-CONTROL TECHNOLOGY-HVU Testing
HVU's shall be tested at 99.95% removal efficiency and shall be aerosol tested annually using ANSI N-510 as guidance for non-ANSI N-509 systems. Records of this testing shall be maintained on file.

14) TRU HVU USE-CONTAMINATION CONTROL-HVU Use Spot Contamination
Use of HVUs for control of localized spot contamination is restricted to spot surface contamination areas found during outdoor radiological field surveys, and to the cleanup of localized radiologically contaminated material (e.g., dust dirt, bird droppings, animal feces, insects, spider webs, tumbleweed fragments, etc.) These types of materials could have beta/gamma contamination levels each exceeding 1 million dpm/100 square cm. but are very localized. HVU use will follow the latest approved version of the HVU NOC (DOE-RL-97-50, as amended). Use of the Guzzler will be performed under the NOC applicable to the emission unit.

15) TRU HVU USE-WDOH NOTIFICATION-HVU Annual Cumulative Dose Exceeded
Records will be maintained of annual cumulative dose and the Department will be notified if exposure from HVU or annual cumulative dose exceeds 10 mrem per hour at 1 foot from the HVU canister for any HVU used under this NOC.

16) TRU HVU USE-PROCESS DESCRIPTION-Dart and Other Venting Systems
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The Dart System is a portable unit that clamps directly onto a drum or onto the drum lid restraint, using a

pneumatic driver remotely activated by wire or radio transmitter. This system penetrates the drum lid with minimal risk of contamination release while installing a Nucfil® or equivalent filter with an aluminum bronze housing to prevent the possibility of sparking. Potential emissions from these outdoor operations will be considered diffuse and fugitive.

Venting of other containers will be done, the majority being fiberglass reinforced plywood (FRP) boxes but also metal containers hereafter referred to collectively as boxes, located in the LLBG. Two venting systems for the boxes will be used. Both systems will be capable of mating to various sized boxes and will be capable of installing a Nucfil® or equivalent filter to vent the box headspace.

One type of vent system uses a steel plate held in place against the side of a box by a forklift as a blast shield for personnel protection in the event the container is pressurized. A pressurization event has less than 1% likelihood during the life of the project. A rubber gasket will provide a seal between the steel plate and the box. A glove bag will then be attached to the steel plate and the box to provide for contamination control during the drilling of the box. The glove bag contains a HEPA type filter for passive control of contaminated particulates that may gradually escape from the box during the drilling operation. In the event contamination is encountered during filter installation, a HEPA vacuum could be connected for cleanup of any spot contamination that is found on the box surface after the filter is installed. The HEPA vacuum would be subject to the sitewide HEPA vacuum emission unit.

After the steel plate and glove bag are in place, personnel will drill a pilot hole into the box through the blast shield opening, monitor for the presence of contamination and hazardous gases, and install a Nucfil® or equivalent filter. These activities will be conducted through glove ports that are an integral part of the glove bag. The drilling will be done with non sparking and cold drilling techniques. A static dissipating cleaner will be used to decay electrostatic build up in the fiberglass wall of the box during drilling.

The second type of vent system for FRP boxes that may be used is similar to the portable drum venting system operating at T Plant. There could be several of these units in use within the LLBG. A glove bag with HEPA type filter is used but without the steel plate and the drilling will be done remotely. The drill assembly and motor and bit type will remain the same. The system uses a pneumatic cold drilling technique that utilizes remote activation. The FRP venting system is placed on the top or side of the box and held in place with straps or clamps throughout the drilling and filter installation operation. A static dissipating cleaner will be used to decay electrostatic build up in the fiberglass box wall during drilling. A time weighted release of 60 minutes per box is allowed for drilling and filter installation. After holes are drilled, Nucfil® filters or equivalent will be hand installed in the box using glove ports in the glovebag.

In the event contamination is encountered during the installation of a Nucfil® or equivalent filter, a HEPA vacuum would be connected for cleanup of spot contamination after the Nucfil® or equivalent filter is installed. The HEPA vacuum would be subject to the sitewide HEPA vacuum approved emission unit.

17) TRU HVU USE-ABATEMENT TECHNOLOGY-Excavation and Retrieval of Containers
The administrative control points set in this emission unit for contamination, as monitored by standard radiological field instrumentation, will be used to bound emissions based on current efficiencies of typical RadCon field contamination instruments. The controls listed within this approval apply to TRU Waste Retrieval Project open air excavation and retrieval activities.

Emission Unit ID: 461

200 W-PORTEX 011

Permacon Type Unit

This is a MINOR, ACTIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)		Quarterly frequency revisited after a year for changes to annual.

Sampling Requirements Quarterly for 2 weeks of operations

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at the Permacon Type Unit involve headspace gas sampling of waste containers at the CWC.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Permacon Type Unit at CWC (Replaces NOC 654)	AIR 15-701	7/2/2015	934

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.80E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Permacon:

This license allows the placement of a Permacon type modular containment unit in the existing CWC buildings for the purpose of sampling the head space gas within solid waste storage containers. The ventilation system for the 2404-W series storage buildings consists of two roof mounted exhausters, each rated at a minimum of 16, 775 cubic feet per minute. CWC storage building of similar dimensions and venting as the 2404-W series must be selected for the Permacon type unit.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 7.60E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	9.50E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Alpha release rate based on Am-241.			
Beta - 0	7.60E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Beta release rate based on Sr-90.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ac - 228	Am - 241	Am - 243	Ar - 41	Ba - 137
Bi - 212	Bi - 214	C - 14	Ce - 141	Ce - 144

Cf - 252	Cm - 242	Cm - 243	Cm - 244	Co - 58
Co - 60	Cr - 51	Cs - 134	Cs - 137	Eu - 152
Eu - 154	Eu - 155	Fe - 59	H - 3	I - 129
I - 131	K - 40	Kr - 85	Mn - 54	Nb - 95
Np - 237	Pb - 212	Pb - 214	Pm - 147	Po - 210
Po - 212	Po - 216	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242	Ra - 224	Ra - 226	Rn - 220
Ru - 103	Ru - 106	Sb - 124	Sb - 125	Sn - 113
Sr - 89	Sr - 90	Tc - 99	Th - 228	Th - 232
Th - 234	Tl - 208	U - 232	U - 233	U - 234
U - 235	U - 236	U - 238	Y - 90	Zn - 65
Zr - 95				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) WDOH ALTERNATIVE APPROVAL-Periodic Confirmatory Measurements
The isotopes identified in Condition 3 represent all of the significant radionuclide's historically present at the CWC, including some that are not significant. Any radionuclide on the chart of the nuclides could be present or received at CWC in the future. Periodic confirmatory measurements to verify low emissions are performed by taking a two-week air sample on a quarterly basis and analyzing for total alpha and total beta. Although any radionuclide could be present for conservatism all alpha is assumed to be Am-241 and all beta is assumed to be Sr-90 for dose calculation estimates.

5) RELEASE RATES-WDOH Log Requirements
In accordance with WAC 246-247-080 (7), a log shall be maintained for the Permacon unit. This log will be used to record the dates, locations, and duration of operation. In accordance with WAC 246-247-080 (8), the Permacon log will be maintained in a readily retrievable storage area and be available for review in order to ensure compliance for at least five years.

6) MONITORING REQUIREMENTS- Periodic
A fixed head sampler, located inside the Permacon near the exhaust stack, shall be used at least quarterly (for the period of operation or two weeks which ever is lower) to obtain samples of the airspace within the Permacon unit during operation for each quarter that the Permacon is operated.

7) ABATEMENT TECHNOLOGY-Ventilation
Emissions from the Permacon shall be vented through a 2,000 cfm or less testable HEPA filter exhauster.

8) PROTOCOLS FOR INCLUSION OF NEW RADIONUCLIDES NOT LISTED IN THE EXISTING LICENSE
The Department recognizes that the CWC facility may encounter any radionuclide during their normal operations. Notwithstanding the radionuclide's and limits listed in Condition 3, additional radionuclide's may be possessed subject to the following evaluation and notification requirements. If a new radionuclide is identified that is not listed in this license, a written notification will be made to the Department . An assessment will also be made to determine if the radionuclide contributes greater than 10% of the PTE or greater than 0.1 mrem TEDE to the MEI or greater than 25% of the TEDE to the MEI after abatement controls. The assessment and notification will be made within 30 days of identifying the new radionuclide (WAC 264-247-060(5)).

Emission Unit ID: 472

200W P-Trench31 001

Leachate Collection Tank for Trench 31

This is a MINOR, FUGITIVE, non-point source emission unit.

200 West Burial Grounds

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)			Before and after emptying the tank. When the tank is not empty, take a monthly smear (after commencement of bulk waste disposal).

Sampling Requirements Smear sample of overflow pipe

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities in Trench 31 involve receipt and disposal of TSCA wastes on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Trench 31: Leachate Collection and Storage Tank (LLBG Mixed Waste Disposal) (Replaces NOC 834)	AIR 16-905	9/12/2016	1020

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.03E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Trench 31 shall be used for the disposal of low-level waste, low-level mixed waste, and radioactive waste containing Toxic Substances Control Act regulated polychlorinated biphenyls resulting from current operations across the Hanford Site, cleanup activities across the Hanford Site and from other offsite facilities. The trench shall provide disposal capacity for approximately 22,000 m3 (28,000 yd3) of waste. Waste to be disposed of in the trench can consist of contaminated soil and debris (bulk waste), sealed containers, vented containers, and any other type of waste meeting Low Level Burial Grounds (LLBG) waste acceptance criteria.

The Trench 31 design encompasses primary and secondary leachate collection systems. The primary and secondary leachate collection systems are comprised of alternating layers of soils, geomembrane liners, collection pipes, collection sumps, sump pumps, and a single collection tank. Liquid accumulates under the disposed material in the bottom of the trench in the primary liner of each trench (not exposed directly to atmosphere). When approximately one foot of precipitation of liquid is accumulated in the collection sumps, the pumps are activated to transfer the liquid to the tank.

The leachate collection tanks at Trenches 31 is above ground. The tank has a capacity of approximately 10,000 gallons. The tank is cylindrical and approximately 8 feet (2.5 meters) in diameter and 24 feet (7.2

meters) long. It is passively vented via a liquid overflow pipe.

For disposal, the liquid will be transferred from the tanks to a tanker truck. Based on past operational experience, it is anticipated that up to approximately 415,000 gallons, per tank, per year could be transferred to the tanker trucks. More than one truck may be used at the same time. The tanker truck(s) shall be fitted with a three-quarter inch vent that will be opened during filling and emptying operations.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.10E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Pu - 239/240	9.74E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
U - 0 Isotopes of U-233/234/235/238	7.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Co - 60	Cs - 137	Eu - 152
Eu - 154	Eu - 155	Na - 22	Pu - 238	Pu - 239/240
Ra - 226	Sr - 90	Tc - 99	Th - 230	Th - 232
U - 0				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) RADIOACTIVE ISOTOPES -Identified
The radioactive isotopes identified for this emission unit represent all of the significant radionuclides historically present for the leachate collection Tank 31, including some that are not significant. Any radionuclide on the chart of nuclides could be present or received at leachate collection Tank 31 in the future.

5) PERIODIC CONFIRMATORY MEASUREMENT
Upon commencement of placing non-containerized radioactively contaminated waste in Trench 31, a periodic confirmatory measurement (PCM) activity shall be implemented. This PCM activity shall consist of smearing the orifice(s) of the liquid overflow pipe(s) before and after emptying the tank(s). During those months when the tank is not emptied, a smear shall be taken monthly. After the accumulation of one year's worth of smear data, the frequency of this PCM activity shall be reassessed based on the results of the smear data.

Emission Unit ID: 473

200W P-Trench34 001

Leachate Collection Tank for Trench 34

This is a MINOR, FUGITIVE, non-point source emission unit.

200 West Burial Grounds

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)			Before and after emptying the tank. When the tank is not empty, take a monthly smear (after commencement of bulk waste disposal).

Sampling Requirements Smear sample of overflow pipe

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities in Trench 34 involve receipt and disposal of TSCA wastes on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Trench 34: Leachate Collection and Storage Tank (LLBG Mixed Waste Disposal) (Replacs NOC 834)	AIR 16-904	9/12/2016	1021

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.03E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Trench 31 shall be used for the disposal of low-level waste, low-level mixed waste, and radioactive waste containing Toxic Substances Control Act regulated polychlorinated biphenyls resulting from current operations across the Hanford Site, cleanup activities across the Hanford Site and from other offsite facilities. The trench shall provide disposal capacity for approximately 22,000 m3 (28,000 yd3) of waste. Waste to be disposed of in the trench can consist of contaminated soil and debris (bulk waste), sealed containers, vented containers, and any other type of waste meeting Low Level Burial Grounds (LLBG) waste acceptance criteria.

The Trench 34 design encompasses primary and secondary leachate collection systems. The primary and secondary leachate collection systems are comprised of alternating layers of soils, geomembrane liners, collection pipes, collection sumps, sump pumps, and a single collection tank. Liquid accumulates under the disposed material in the bottom of the trench in the primary liner of trench (not exposed directly to atmosphere). When approximately one foot of precipitation of liquid is accumulated in the collection sumps, the pumps are activated to transfer the liquid to the tank.

The leachate collection tanks at Trench 34 is above ground. The tank has a capacity of approximately 10,000 gallons. The tank is cylindrical and approximately 8 feet (2.5 meters) in diameter and 24 feet (7.2 meters)

long. It is passively vented via a liquid overflow pipe.

For disposal, the liquid will be transferred from the tanks to a tanker truck. Based on past operational experience, it is anticipated that up to approximately 415,000 gallons, per tank, per year could be transferred to the tanker trucks. More than one truck may be used at the same time. The tanker truck(s) shall be fitted with a three-quarter inch vent that will be opened during filling and emptying operations.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.10E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Pu - 239/240	9.70E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
U - 0 Isotopes of U-233/234/235/238	7.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Co - 60	Cs - 137	Eu - 152
Eu - 154	Eu - 155	Na - 22	Pu - 238	Pu - 239/240
Ra - 226	Sr - 90	Tc - 99	Th - 230	Th - 232
U - 0				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) PERIODIC CONFIRMATORY MEASUREMENT
Upon commencement of placing non-containerized radioactively contaminated waste in Trench 34, a periodic confirmatory measurement (PCM) activity shall be implemented. This PCM activity shall consist of smearing the orifice(s) of the liquid overflow pipe(s) before and after emptying the tank. During those months when the tank is not emptied, a smear shall be taken monthly. After the accumulation of one year's worth of smear data, the frequency of this PCM activity shall be reassessed based on the results of the smear data.

5) RADIOACTIVE ISOTOPES - Identified
The radioactive isotopes identified for this emission unit represent all of the radionuclides historically present for the leachate collection Tank 34, including some that are not significant. Any radionuclide on the chart of nuclides could be present or received at leachate collection Tank 34 in the future.

Emission Unit ID: 476

Hanford Sitewide Guzzler-001

Guzzler

This is a MINOR, ACTIVELY ventilated emission unit.

GUZZLER

Emission Unit Information

Stack Height: 12.00 ft. 3.66 m. Stack Diameter 0.75 ft. 0.23 m.

Average Stack Effluent Temperature: 54 degrees Fahrenheit. 12 degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Collection Tank and Plate Separator	1	
	Cyclone Separator	2	
	Micro-strainer Device	1	
	HEPA	3	Three in-place tested HEPA filters in parallel.
	Baghouse	2	Baghouse system with a total of 68 bags (i.e., 34 bags per baghouse).

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61; Appendix B, Method 114(3)	Each radionuclide that could contribute greater than 10 percent of the PTE TEDE to the MEI, greater than 0.1 mrem/yr PTE TEDE to the MEI, and greater than 25 percent of the TEDE to the MEI after controls	When the HEPA filters are replaced and annually screening the HEPA filtration system.

Sampling Requirements Radiation surveys and to include but not limited to NDA testing of the HEPA filters and screening the HEPA filtration system using gamma spectroscopy.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The Guzzler portable emission unit is a completely self-contained vacuum used to support operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Use of the Guzzler (Filter Vacuum Truck) Vacuum Excavation System for Radiologically Limited Activities on the Hanford Site (Replaced NOC 860)	AIR 17-111	1/9/2017	1072

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.00E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the

approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The utilization of the Guzzler for potholing to support utility locations, soil removal/general excavations, and radiologically limited activities involving roof cleaning (note, radiologically limited activities means work locations where soil radiological contamination levels are not expected to exceed 50,000 dpm/probe size beta-gamma and/or 140 dpm/probe size alpha). For purposes of this license, "soil" will be defined as sand, dirt, gravel, gravel and tar mixtures, rock, or any combination of these items. Note, beta-gamma probe size is ~16.7 cm^2 and alpha probe size is ~50 cm^2. Note, the terms, “Guzzler,” and “Filtered Vacuum Truck (FVT),” may be used interchangeably.

In most cases, for excavations, the excavated soil will be used for backfilling of the excavated areas. The backfilling activities will be completed manually, using shovels, or using backhoes, loaders, or packers. For cleaning activities, and some excavations, the soil will either be containerized for disposal or transported to an appropriate disposal facility (e.g., Low Level Burial Grounds, Environmental Restoration Disposal Facility) within the FVT collection tank for no containerized disposal. In some cases, soil may be unloaded from the FVT and packaged at the disposal facility for containerized disposal.

Only radiologically contaminated or potentially contaminated soil will be removed or excavated using the regulated FVT system. All soil removed from the system will be handled as potentially contaminated, unless otherwise surveyed or analyzed.

The regulated FVT will not be used for the decontamination of valve pits within the tank farms. The regulated FVT is also excluded from areas containing radiological contamination above 50,000 dpm/probe size beta-gamma and/or 140 dpm/probe size alpha.

Soil can be slowly dumped from the collection tank by controlling the raising and lowering speed of the tank.

Soil from contaminated areas enters the unit through a hose. An air lance attachment may be used to aid in the loosening of soil.

The various cleaning and excavation activities will be completed using the FVT along with shovels, picks and/or the air lance attachment to loosen the soil, and backfilling activities will be completed using backhoes, loaders, compactors with plates, and picks and shovels, as appropriate. In some cases, however, an area may be physically inaccessible for the regulated FVT. In those instances, the cleaning or excavation, as well as any backfilling activities, will be completed using backhoes, loaders, compactors with plates, and/or picks and shovels, as appropriate.

Areas of the FVT where condensate may accumulate, such as the HEPA filter housing, silencer, and micro-strainer, will be drained on an as needed basis to remove condensate buildup. The drained water will be containerized and properly dispositioned. If radiological contamination is present, the liquid may be solidified with absorbent materials, and the resulting matrix may be packaged and disposed of at a radioactive landfill (e.g., LLBG, ERDF, etc.). Alternatively, the liquids may be transferred to an approved container or tanker truck (see Emission Unit 888) for transport to the Effluent Treatment Facility (Emission Unit 301) or other facility licensed to receive radioactively contaminated liquids.

Roof Replacement Screening Surveys

Roof replacement activities include radiological surveys to determine if radioactive contamination is present and the extent of such contamination. Spot contamination (e.g., bird droppings) managed before commencement of roof replacement work is handled per existing methods and is considered a routine housekeeping activity (similar to spot contamination found at ground levels).

Managing Radioactive Contamination for Roof Replacement

Contaminated roofing materials may be removed by manual or powered methods, including saws or other cutting devices, shovels, wheelbarrows, conveyors, chutes, or other similar equipment (conveyors or chutes

may be used only for packaged radioactive waste or for non-contaminated roofing material). Radioactive waste shall be managed in accordance with existing onsite requirements and waste acceptance criteria. Radioactive waste either shall be containerized in drums, skiffs, boxes, or other containers, or handled as bulk waste (e.g., dump truck) and transferred to the appropriate disposal facility. Management of radioactive contamination is allowed to include removal and subsequent size reduction of contaminated equipment from a roof as well as isolation and blanking of utilities, vents, and ductwork.

Accumulated rainwater that has contacted contamination areas shall be allowed to evaporate in place or is characterized, collected, and managed in accordance with stormwater discharge requirements or transferred to an appropriate disposal facility.

A graded approach is allowed to be used to match controls with expected contamination levels per radiological control manuals and methods. Radiological contamination that is encountered will either be managed as a fixed contamination area (i.e., less than 20 dpm/100 cm2 smearable alpha and less than 1,000 dpm/100 cm2 smearable beta) or will be managed as a contamination area (radiological contamination levels are between 20 and 2,000 dpm/100 cm2 alpha or between 1,000 and 100,000 dpm/100 cm2 beta) using appropriate controls to minimize worker exposure. These controls include water for dust suppression, fixatives, covers, windscreens, or greenhouses (with PTRAEU exhausters) that will be applied, if needed, as determined by the Health Physics organization, and consist of ALARA techniques.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.00E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.79E-03	Gas	WAC 246-247-030(21)(a)
200 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. Am-241 used as conservative alpha emitter.			
Alpha - 0	1.30E-04	Gas	WAC 246-247-030(21)(a)
300 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. U-234 used as conservative alpha emitter.			
Alpha - 0	7.26E-04	Gas	WAC 246-247-030(21)(a)
400 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. Pu-239 used as conservative alpha emitter.			
Alpha - 0	1.79E-03	Gas	WAC 246-247-030(21)(a)
100 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. Am-241 used as conservative alpha emitter.			
B/G - 0	4.48E-02	Gas	WAC 246-247-030(21)(a)
200 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. Sr-90 used as conservative beta emitter.			
B/G - 0	4.48E-02	Gas	WAC 246-247-030(21)(a)
300 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. Sr-90 used as conservative beta emitter.			
B/G - 0	1.46E-02	Gas	WAC 246-247-030(21)(a)
400 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. Sr-90 used as conservative beta emitter.			
B/G - 0	4.48E-02	Gas	WAC 246-247-030(21)(a)
100 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. Sr-90 used as conservative B/G emitter.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Co - 60	Cs - 134	Cs - 137	Eu - 152
Eu - 154	Eu - 155	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Ru - 106	Sb - 125	Sn - 113	Sr - 90
Th - 232	U - 234	U - 235	U - 238	

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) ABATEMENT TECHNOLOGY- EXCAVATION AND BACKFILLING-Wind Speed Limit
All soil excavation activities operating under this NOC must cease operations when sustained wind conditions reach or exceed 20 miles per hour.

5) REPORTING-WDOH Approved Log
The facility must maintain a log in an approved format for this activity or emission unit. (WAC 246-247-080(7))

6) WDOH NOTIFICATION-Allowable Radionuclides
The following are the allowable radionuclides: Co-60, Sr-90, Cs-137, Cs-134, Th-232, U-234, U-235, U-238, Eu-152, Eu-154, Eu-155, Ru-106, Sn-113, Sb-125, Am-241, Pu-238, Pu-239, Pu-240, and Pu-241. If any other radionuclides are suspected or verified through soil analysis, the Department must be notified.

7) REPORTING-Annual Emission Limits
The following are the annual emission limits for the NOC:

100 AREA:
For FVT Cleaning/Excavation: 2.88E-3 mrem Sr-90, 3.4E-2 mrem Am-241
For Backfilling: 2.88E-6 mrem Sr-90, 3.45E-5 mrem Am-241

200 AREA :
For FVT Cleaning/Excavation: 1.96E-3 mrem Sr-90, 2.34E-2 mrem Am-241
For Backfilling: 1.96E-6 mrem Sr-90, 2.34E-5 mrem Am-241

300 AREA:
For FVT Cleaning/Excavation: 3.9E-2 mrem Sr-90 8.3E-3 mrem U-234
For Backfilling: 3.9E-5 mrem Sr-90, 8.3E-6 mrem U-234

400 AREA:
For FVT Cleaning/Excavation: 8.5E-4 mrem Sr-90, 8.34E-3 mrem Pu-239
For Backfilling: 8.5E-7 mrem Sr-90, 8.34E-6 mrem Pu-239. (WAC 246-247-040(5), WAC 246-247-060(5))

8) REPORTING-NDA on Filter Change and Annual Gamma Spectroscopy
DOE shall monitor this project or emission unit as follows: In addition to the surveys described in this NOC, periodic confirmatory measurements are required. This may include but is not limited to NDA testing of the HEPA filters when the HEPA filters are replaced and annually screening the HEPA filtration system using gamma spectroscopy. (WAC 246-247-075(8))

9) REPORTING-Total Combined Dose to the Offsite MEI
This emission unit is limited to an annual abated dose to the offsite MEI of 5.0 E-2 mrem/yr when combined with the abated offsite dose to the MEI for Emission Unit 1449 "Tank Farm Guzzler ".

Emission Unit ID: 486

200 Area Diffuse/Fugitive

200 Area Diffuse/Fugitive

This is a MINOR, FUGITIVE, non-point source emission unit.

200 diffuse/fugitive emissions

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075 [3]	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program

Sampling Requirements Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Associated with emissions from operations, deactivation, surveillance and maintenance, and inactive sites in the 200 Area from sources not actively ventilated.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Diffuse and Fugitive Minor Emissions on the Central Plateau (Replaced NOC 810, 838, 847)	AIR 17-209	2/22/2017	1067

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.00E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Activities involving radioactive contamination on the central plateau that are not otherwise covered by specific diffuse and fugitive licenses. The characterization and stabilization (as defined in condition 4 and 6) of work activities within central plateau, construction, excavations, operation and maintenance that make up the 200 Area Diffuse/Fugitive emission unit.

Activities involving radioactive contamination on the central plateau:
a) Radioactive material excavation.
b) Housekeeping activities.
c) Surveillance activities.
d) Equipment, materials, and waste movement activities.
e) Roof replacement activities involving radioactive contamination at facilities on the central plateau.
f) WRAP facilities diffuse and fugitive storage of sealed internally contaminated containers (as defined in condition 5).

The 200 Area Diffuse/Fugitive activities licensed are limited to emission units managed by DOE within the Central Plateau. DOH shall be informed, and written DOH concurrence obtained, prior to initiation of

stabilization activities for 200 Area Diffuse/Fugitive activities.

Diffuse/fugitive license pertains to radiological air emissions from unregistered source or support new activities, modifications, construction, or decommissioning (as defined in WAC 246-247) which could result in a potential increase in emissions. Diffuse/fugitive radioactive air emissions are emissions which do not and could not reasonably be controlled by passing through a stack, active vent, or other functionally equivalent structure, and which are not feasible to directly measure and quantify. There are not any chemical processes associated with diffuse and fugitive air emissions. The physical activities that could contribute to diffuse/fugitive emissions are project related activities; excavation, drilling, demolition, housekeeping activities, containerized material storage and movement, surveillance activities, decontamination of equipment.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.00E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	3.50E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 3.5 Ci/yr 241Am and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during characterization and stabilization operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all beta/gamma is assumed to be Cs-137 and all alpha is assumed to be Am-241 for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

B/G - 0	1.40E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 14.0 Ci/yr 137Cs and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during characterization and stabilization operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all beta/gamma is assumed to be Cs-137 and all alpha is assumed to be Am-241 for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) DEFFINITION-Characterization
Characterization means entry and radiological/industrial/chemical characterization activities, not to include activities defined as stabilization below. The license allows characterization of low and high PTE work activities. Characterization is expected to improve the accuracy with which the PTE is estimated for a particular work activity. Characterization data shall be documented to confirm the initial categorization:

a) Characterization data may require the upgrading of a particular work activity from low to high PTE. DOH shall then be informed, and written DOH concurrence to proceed to stabilization shall be required (email is adequate).
b) Characterization data may allow the downgrading of a particular work activity from high to low PTE. DOH shall then be informed (e-mail). The basis for the downgrading shall be provided to DOH as part of this information.
c) Characterization activities shall be conducted in accord with the ALARA principle.

5) DEFINITION-Stabilization
Stabilization means the size reduction, packaging/removal or fixing of whatever contamination or radioactive material may be removed or fixed without altering the existing abatement unit structure or environmental containment function. Stabilization is not to proceed without first obtaining characterization data as above.
a) Stabilization activities shall be conducted in accord with the ALARA principle.
b) Monitoring and documentation sufficient to demonstrate compliance shall be maintained.

c) Disposition and transportation of removed material shall be in accord with applicable regulation.

6) REPORTING-Disturbance Factors
Disturbance factors shall not be used in the determination of PTE except as by permission of DOH on a case-by-case basis. The WAC 246-247-030(21)(a) release fractions shall be assumed, except as may be approved otherwise on a case-by-case basis.

7) REPORTING-Selection and Documentation
The basis for selection of radioactive air controls/abatements for each work activity shall be documented in sufficient detail to demonstrate compliance. DOH may audit the controls and determination of containment risk under this NOC, and independently judge the adequacy of controls, assigned risk and risk components for any activity. Records for radioactive material excavation include:

a) Work instructions (written).
b) Radiological work permit.
c) Radiological survey report(s).

8) REPORTING-Characterization and Stabilization-Effective Isolation
In the case of fugitive work activities in which the work activity may be effectively isolated from a significant fraction of the source material comprising the PTE, DOH will, on a case-by-case basis, consider a suitably defined and calculated PTE less than that for the whole emission unit. "Effectively isolated" may but does not necessarily imply physical barriers. E-mail approval of such cases is required prior to use. Work activities may be added to the compliance log, provided DOH is given the new compliance log entry in writing (e-mail is sufficient).

9) REPORTING-Characterization and Stabilization-Authorized WDOH Compliance Log Use
The 200 Area Diffuse/Fugitive activities licensed are limited to work activities listed in a compliance log maintained by a DOE central coordinator. The compliance log shall initially categorize each work activity as low or high PTE on the basis of best available information. Low PTE is defined as 1.0 E-3 mrem/year or less, and high PTE is defined as greater than 1.0 E-3 mrem/year. The compliance log shall list estimated or measured actual calendar year emissions for each work activity on which stabilization activities have commenced. Additionally, the compliance log shall provide a total project actual emission for the calendar year.

10) REPORTING-Characterization and Stabilization-Annual Report
An initial copy of the compliance log shall be formally transmitted to DOH by June 30 or prior to initiating any activities under the license, whichever comes first. This initial transmittal shall provide all log information available by the time of submittal, and shall also include a projected list of work activities to be addressed under the license during the next 12 months. Following the date of the first transmittal, and by June 30 of each year, a copy of the previous calendar year compliance log shall be formally transmitted to DOH, along with a projected list of work activities to be addressed under the license during the next 12 months. The log shall be available for DOH inspection. (WAC 246 -247-080(3))

11) REPORTING-PTE Calculation-Radioactive Material Excavation
For radioactive material excavation, compliance may be demonstrated via calculation based on a release fraction of 1.0 E-3, appropriate Hanford dose conversion factors, radioactive material survey records, excavated volume, and estimated Ci content per unit radioactive material volume. Unless excavation is conducted in accord with the DOH approved PTREAU or HEPA Vacuum Truck (Guzzler) license, credit for abatement or limited disturbance shall not be taken without prior written approval by DOH. (WAC 246-247-030(21))

12) REPORTING-Radiological Controls for Radioactive Material Excavation: Records of Surveys
Health Physics coverage shall be provided as specified in the radiological work permit. DOH does not approve work permits. DOH may independently judge the adequacy of the Health Physics coverage. Licensee shall maintain records of Health Physics coverage and survey results.

13) MONITORING- Near Field Monitoring
The near-field monitoring (NFM) system is not sufficient in itself to demonstrate compliance to the emission limits of the license for all permitted activities (WAC 246-247-040(1,5,6)). The following monitoring requirements are required in addition to NFM for these activities:
a) Radioactive material excavation – Conditions for “MONITORING-Radiological Monitoring for Radioactive Material Excavation: Pre and Post Job Survey” and “MONITORING-Radiological Monitoring for Radioactive Material Excavation:”
b) Housekeeping activities – NFM performed in accordance with Condition for “MONITORING-Total Alpha, Total Beta/Gamma”
c) Surveillance activities – routine radiological surveys

d) Equipment, Material and waste movement activities – radiological surveys
e) Roof replacement activities involving radioactive contamination at facilities on the central plateau – radiological screening surveys
f)WRAP facilities diffuse and fugitive storage of sealed internally contaminated containers - NFM performed in accordance with Condition for "MONITORING-Total Alpha, Total Beta/Gamma"

14) MONITORING-Radiological Monitoring for Radioactive Material Excavation: Pre and Post Job Survey
At a minimum, pre-job and post-job surveys shall be made.

15) MONITORING-Radiological Monitoring for Radioactive Material Excavation:
Radiological monitoring shall be in accordance with approved governing procedures. DOH may independently judge the adequacy of the monitoring.

16) MONITORING-Case by Case
DOH reserves the right to require additional monitoring on a case-by-case basis.

17) MONITORING-Total Alpha, Total Beta/Gamma
In addition to the monitoring required on page one of this license, total alpha, total beta/gamma shall be monitored periodically, the period to be consistent with the duration of the activity. The bases for the monitoring method and the period shall be documented. Monitoring records shall explicitly demonstrate compliance to the limit on TEDE to the MEI set down in this license. Monitoring may include air monitoring, or CAM records.

18) CONTAMINATION CONTROL-Stabilization Activities
Stabilization activities shall not be initiated for high PTE work activities without written DOH approval. Work activities having PTE greater than 5E-2 mrem/year shall require the submittal of a separate notice of construction application.

19) CONTAMINATION CONTROL-Graded Approach
A graded approach is allowed to be used to match controls with expected contamination levels per radiological control manuals and methods. Radiological contamination that is encountered will either be managed as a fixed contamination area (i.e., less than 20 dpm/100 cm2 smearable alpha and less than 1,000 dpm/100 cm2 smearable beta) or will be managed as a contamination area (radiological contamination levels are between 20 and 2,000 dpm/100 cm2 alpha or between 1,000 and 100,000 dpm/100 cm2 beta) using appropriate controls to minimize worker exposure. These controls include water for dust suppression, fixatives, covers, windscreens, or greenhouses (with PTRAEU exhausters) that will be applied, if needed, as determined by the Health Physics organization, and consist of ALARA techniques.

20) CONTAMINATION CONTROL-Radioactive Material Excavation
Radioactive material excavation associated with 200 Area diffuse/fugitive: Radioactive material may be excavated to support activities involving radioactive contamination of Central Plateau work activities. An initial survey shall be performed of the area to be excavated. Surveys shall be performed throughout the excavation to assure that environmental protection is maintained. Once the excavation begins, water or other fixative of equal or better effectiveness shall be used, as necessary, to prevent the spread of dust. To the extent practicable using hand held instrument field survey techniques, the clean material shall be separated from the material identified as contaminated. The contaminated material shall have a fixative applied or shall be covered by plastic at the end of the shift, and as necessary, to stabilize the contaminated material.

21) CONTAMINATION CONTROL-Radiological Controls for Radioactive Material Excavation: Surveys Required
Beta-gamma surveys of the ground surface are required prior to excavation in Contamination Areas (CA's), High Contamination Areas (HCA's), Radioactive Material Contamination Areas (SCA's), and Underground Radioactive Material Areas (URMA's). If in an area of known or suspected alpha contamination, or if beta/gamma contamination is detected, alpha surveys shall be performed as well.

22) CONTAMINATION CONTROL-Radiological Controls for Radioactive Material Excavation: Predicted Winds are >20 mph
Suppressants, such as water, fixatives, covers, or windscreens, shall be used as necessary, including at the end of each shift or when sustained or predicted winds are >20 mph.

Excavation of radioactive material shall not commence if sustained winds are predicted to exceed 20 mph during the work shift.

Excavation of radioactive material shall cease if sustained winds exceed 20 mph. A local wind-speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, provided the reading is taken in an unobstructed location that is representative of the work area. Use of a local device and the measured wind-speed

readings taken from it must be documented, and the documentation retained.

23) CONTAMINATION CONTROL-Radiological Controls for Contaminated Material: HCA Controls
If the contamination for the general area is greater than 2000 dpm/100 sq.cm. alpha or greater than 100,000 dpm/100 cm.sq. beta-gamma, place in a safe and stable condition and stop work, notify DOH, and implement the controls listed below. Once notifications have been made and the following controls implemented, excavation may continue:
a) Radioactive material shall be wetted prior to excavation if not already damp.
b) General area workplace air monitoring shall be performed during excavation activities.
c) Excavation and contaminated radioactive material piles shall be covered with plastic, or fixative shall be applied, at the end of each shift or as necessary to prevent the spread of airborne contamination.
D) Contaminated radioactive material containing >100,000 dpm/100 sq.cm. beta-gamma or >2000 dpm/100 sq.cm. alpha shall be containerized or covered with clean fill if it is to be left for greater than 48 hours.

24) CONTAMINATION CONTROL-Radiological Controls for Radioactive Material Excavation: >20mrad/hr. Stop Work Reassess
If radioactive material contamination exceeds 20 mrad/hour (open window reading), work shall be stopped and placed in a safe and stable condition, and adequacy of controls will be reassessed. DOH shall be notified (e-mail notification is required). Work may continue when approved by DOH (e-mail concurrence is required).

25) CONTAMINATION CONTROL-Radiological Controls for Radioactive Material Excavation-Hot Specks
If hot specks are detected during the radiological surveys, the specks shall be removed and contained before the activity is allowed to continue unless located in the bottom of the trench after excavation has been completed. Specks found in the bottom of the completed trench may be covered with clean fill. A hot speck is defined as a very small amount (i.e., less than or equal to 100 square centimeters) of contamination.

26) CONTAMINATION CONTROL-PTREAU or HEPA Use
If a portable/temporary radioactive air emission unit (PTRAEU) or HEPA filtered vacuum is used, controls as described in the associated license would be followed.

27) CONTAMINATION CONTROL-Managing Radioactive Contamination
Contaminated roofing materials may be removed by manual or powered methods, including saws or other cutting devices, shovels, wheelbarrows, conveyors, chutes, or other similar equipment (conveyors or chutes may be used only for packaged radioactive waste or for non-contaminated roofing material). Radioactive waste shall be managed in accordance with existing onsite requirements and waste acceptance criteria. Radioactive waste either shall be containerized in drums, skiffs, boxes, or other containers, or handled as bulk waste (e.g., dump truck) and transferred to the appropriate disposal facility. Management of radioactive contamination is allowed to include removal and subsequent size reduction of contaminated equipment from a roof as well as isolation and blanking of utilities, vents, and ductwork.

28) CONTAMINATION CONTROL-Rainwater
Accumulated rainwater that has contacted contamination areas shall be allowed to evaporate in place or is characterized, collected, and managed in accordance with storm water discharge requirements or transferred to an appropriate disposal facility.

Emission Unit ID: 498

200 W-296P047-001

296-P-47

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 40.00 ft. 12.19 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 80.68 ft/second. 24.59 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Heater	1	
	Demister	1	
	Prefilter	1	
	HEPA Filter Stages/Banks	2	In series, one filter per stage/bank
	Fan	1	1000 cfm

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114.	Sr-90, Cs-137, Am-241, Pu-239/240, Total Alpha, Total Beta	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit, also known as POR08, is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit is a portable exhauster that operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-P-47 Operation - Phase II Waste Retrieval and Closure (Replaces NOC 825)	AIR 15-805	7/29/2015	939

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from tanks at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped to a receiver tank, staging tank, storage double shell tank (DST), or other staging/storage vessel associated with the supplemental treatment, packaging, or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUICING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving DST, recirculated supernatant/water, chemical agent, or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities. The vacuum waste retrieval system is introduced into the tanks by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel, or a staging single shell tank (SST), storage DST, or other staging/storage vessels associated with supplemental treatment, packaging, or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the tanks. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B, and 241-T Tank Farms, a vacuum retrieval process tank, staging tank, staging SST, storage DST, or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the tank being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some tanks. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance.

The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST, or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste. The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non leaker tanks, and 2) a vacuum retrieval option is intended for retrieval of assumed leaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent

reaching pressures above 37,000 psig.

.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 241 2.30E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Am - 243 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ba - 137 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	C - 14 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cd - 113 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Cm - 242 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 244 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Co - 60 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 134 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 137 2.10E+06 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE
Eu - 152 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 154 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
H - 3 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	I - 129 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Nb - 93 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ni - 59 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ni - 63 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Np - 237 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pa - 231 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 5.30E+03 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE
Pu - 240 1.20E+02 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Pu - 241 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ra - 226 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ra - 228 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ru - 106 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sb - 125 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Se - 79 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sm - 151 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sn - 126 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sr - 90 5.50E+06 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Tc - 99 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Th - 229		

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Th - 232 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 232 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
U - 233 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 234 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 235 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
U - 236 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Y - 90 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Zr - 93 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

4) RELEASE RATES-WDOH Log Approval
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms (WAC 246-247-080(7)).

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed (tank inventory and supernate) using the release fraction for the tank inventory of 1.0 E-3 for tank inventory and 8.0 E-5 for supernate (WAC 246-247-040(5) and WAC 246-247-060(5)).

6) WDOH ALTERNATE APPROVAL-Non Destructive Analysis Method
A pre-operational Non Destructive Analysis (NDA) of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the in-service date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Standards
General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations. (WAC 246-247-040(5) and WAC 246-247-060(5)).

8) WDOH NOTIFICATION-Leak Testing Cannot be Performed
If new or altered section of ductwork cannot be tested due to tie-ins, WDOH will be notified (WAC 246-247-040(5) and WAC 246-247-060(5)).

9) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137, Sr-90, Pu-239/240, and Am-241 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI when a unit is deployed or redeployed (WAC 246-247-040(5) and WAC 246-247-110(8)).

10) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels (WAC 246-247-040(5) and WAC 246-247-060(5)).

11) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Contitions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single shell tank due to structural concerns. The justification for structural concerns with the single shell tank shall

be documented and provided to WDOH upon request. (WAC 246-247-040(5) and WAC 246-247-060(5))

12) WDOH NOTIFICATIONS-High Reading on Weekly Smear Surveys
Monitoring of breather filters during retrieval activities shall consist of weekly smear surveys on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent. Levels above 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha shall be reported to WDOH. (WAC 246-247-040(5) and WAC 246-247-060(5))

13) STANDARDS-Startup Leak Testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

14) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field check requirements (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

15) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on ASME N510 and ASME N511, and shall have a minimum efficiency of 99.95% (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
•Relocating the ventilation system exhauster

16) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity cannot be directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained, based on psychometric charts and engineering calculations, so that the relative humidity remains below 70%. Daily Monitoring is not required over weekends and holidays when no waste disturbing activities are occurring (WAC 246-247-040(5) and WAC 246-247-060(5)).

17) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is also monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters (WAC 246-247-040(5)).

18) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing, shall be insulated (WAC 246-247-040(5) and WAC 246-247-060(5)).

19) ABATEMENT TECHNOLOGY- Ventilation System Exhauster Suspension from Active Service
The following will be implemented when a ventilation system exhauster that has been connected to a radioactive source is shut down and placed in suspension from active service. The following items will be completed 90 days after suspension from active service. Suspension from active service begins when the permit required preventative maintenance tasks are suspended or 365 days from the last day of operation, whichever is sooner.
•Isolate (e.g., valve or blank off) the ventilation system exhauster unit from the source of radioactivity.
•Isolate (e.g., valve or blank off) the source of radioactivity (e.g., tank) or establish an alternative flow path through a registered emission point (e.g., passive filter or powered exhauster).
•Isolate the flow path downstream of the last stage of HEPA filtration by capping the stack or alternative location if the stack has been removed.
•Provide written notification to WDOH documenting completion of the above.
During suspension from active service, the monitoring and associated recordkeeping are not required to be conducted. In addition, the abatement and monitoring system testing (e.g., aerosol testing of the HEPA filters), maintenance, calibration, field checks, and the associated recordkeeping are not required to be conducted (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

20) ABATEMENT TECHNOLOGY-Ventilation System Exhauster Return to Active Service
The ventilation system exhauster will be evaluated for its ability to meet the regulatory requirements to operate prior to placing the exhauster back in service:

•Verify that parts removed during suspension from active service have been replaced-in-kind and the unit has been returned to full function.
•Conduct abatement and monitoring system inspections and field checks.
•Verify that the abatement and monitoring system testing, maintenance, and calibration have been completed. (Note: some testing, maintenance, and calibration can only be completed when the exhauster is running.) The CAM and sampling system are to be operated during aerosol testing.
WDOH will be notified at least seven calendar days prior to conducting operational testing of the ventilation system exhauster (WAC 246-247-040(5) and WAC 246-247-060(5)).

21) CONTAMINATION CONTROL-Max Operating Pressure
During waste retrieval operations, the maximum pressure for any waste retrieval method shall not exceed 37,000 psig (WAC 246-247-040(5) and WAC 246-247-060(5)).

22) CONTAMINATION CONTROL-Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading (WAC 246-247-040(5) and WAC 246-247-060(5)).

23) CONTAMINATION CONTROL-Exhauster Alternate Usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank (WAC 246-247-040(5) and WAC 246-247-060(5)).

24) CONTAMINATION CONTROL-Active ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 689

100K 100 Area Diffuse/Fugitive

100 Area Diffuse/Fugitive Emissions

This is a MINOR, FUGITIVE, non-point source emission unit.

100 K diffuse/fugitive emissions

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
			Abatement controls as required in the following Conditions and Limitations.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential TEDE	Per the sitewide ambient monitoring program

Sampling Requirements Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Associated with emissions from operations, deactivation, surveillance and maintenance, and inactive sites in the 100 K Area, 100 Area from sources not actively ventilated.

Emission Unit ID: 712

200E P-241C106-001

241-C-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 3.04 ft. 0.93 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-106 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1140

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 713

200E P-244CR-002

244-CR Vault Passive Filter A

This is a MINOR, PASSIVELY ventilated emission unit.

244-CR VAULT

Emission Unit Information

Stack Height: 4.33 ft. 1.32 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the 244-CR Vault to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
244-CR-Vault Passive Filter A Radial Breather Filter Operation	AIR 17-710	7/27/2017	1249

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 244-CR Vault Passive Filter A allows ventilation of the 244-CR vault.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 716

200E P-241C104-001

241-C-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.33 ft. 1.62 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-104 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1138

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 717

200E P-241C105-001

241-C-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 4.58 ft. 1.40 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-105 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1139

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 735

200E P-296A044-001

296-A-44

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AN TANK FARM

Emission Unit Information

Stack Height: 28.13 ft. 8.57 m. Stack Diameter 0.84 ft. 0.26 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 91.31 ft/second. 27.83 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	1 bank of prefilters; not required for abatement control.
	HEPA	2	2 HEPAs in series per bank; 2 banks; 1 HEPA per bank required operational.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114	Sr-90, Y-90, Cs-137, Eu-154, Pu-238, Pu-239, Pu-240, Am-241, Pu-241	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-AN Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-45. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-A-44 Operation (Replaced NOC 809)	AIR 17-103	1/1/2017	1022

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.30E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-A-44 and 296-A-45 ventilate the 241-AN Double Shell Tank (DST) Farm which consists of seven individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks.

The 296-A-44 and 296-A-45 ventilation systems serve to remove heat and serve as containment systems for radioactive particulates present in the tank headspace. They ventilate/remove flammable gases that evolve from the liquid surface in the DSTs. After the air leaves the head space, the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored for radioactivity and sampled for radionuclide particulates.

The exhausters may be shut down for maintenance, testing and sampling purposes to evaluate waste conditions, meteorological effects, and/or ventilation configuration on individual DST ventilation rates.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241 1.90E+05 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137 3.40E+07 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated PTE and represents less than 25% of the abated dose.
Eu - 152	Eu - 154 5.20E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238 3.50E+03 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 4.90E+04 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pu - 240 1.20E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 241 6.50E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90 3.40E+07 Contributes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated	

PTE and represents less than 25% of the abated dose.	Tc - 99		Th - 229
Th - 232	U - 232		U - 233
U - 234	U - 235		U - 236
U - 238	Y - 90	3.40E+07	Zr - 93
	Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.		

4) WDOH APPROVAL-Log Approval TWINS
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms. (WAC 246-247-080(7))

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed using the release fraction for the tank inventory of 8.0 E-5.

6) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137 and Sr-90 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI. (WAC 246-247-110(8))

7) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 7.5 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series. If the final HEPA filter in the system exceeds 7.5 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels.

8) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork between the deentrainer and heater, along with the filter housing shall be insulated.

9) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on the applicable requirements from ASME N510 or ASME N511, and shall have a minimum efficiency of 99.95%.
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
(WAC 246-247-075(2))

10) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity is not directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained so that the relative humidity remains below 70%, based on psychometric charts and engineering calculations. Daily monitoring is not required over weekends and holidays when no waste disturbing activities are occurring.

11) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters.

12) ABATEMENT TECHNOLOGY-Condensate Control
The condensate collection system shall be operated and maintained to ensure confinement of tank headspace gases by preventing bypass of the HEPA filters through the condensate drain lines. This system should be operated and maintained to ensure confinement of tank headspace gases and be protective of the HEPA filtration system by maintaining seal pot levels.

13) STANDARDS-Leak Testing of New or Altered Ductwork
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement of in kind

components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration. (WAC 246-247-075(2))

14) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field Check Requirements. (WAC 246-247-075(2))

15) CONTAMINATION CONTROL-Active Ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging), SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If active ventilation is not available, due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval.

Emission Unit ID: 736

200E P-296A045-001

296-A-45

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AN TANK FARM

Emission Unit Information

Stack Height: 28.13 ft. 8.57 m. Stack Diameter 0.84 ft. 0.26 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 91.31 ft/second. 27.83 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	1 bank of prefilters; not required for abatement control.
	HEPA	2	2 HEPAs in series per bank; 2 banks; 1 HEPA per bank required operational.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114	Sr-90, Y-90, Cs-137, Eu-154, Pu-238, Pu-239, Pu-240, Am-241, Pu-241	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-AN Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-44. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-A-45 Operation (Replaced NOC 809)	AIR 17-104	1/1/2017	1025

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.30E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-A-44 and 296-A-45 ventilate the 241-AN Double Shell Tank (DST) Farm which consists of seven individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks.

The 296-A-44 and 296-A-45 ventilation systems serve to remove heat and serve as containment systems for radioactive particulates present in the tank headspace. They ventilate/remove flammable gases that evolve from the liquid surface in the DSTs. After the air leaves the head space, the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored for radioactivity and sampled for radionuclide particulates.

The exhausters may be shut down for maintenance, testing and sampling purposes to evaluate waste conditions, meteorological effects, and/or ventilation configuration on individual DST ventilation rates.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241 1.90E+05 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137 3.40E+07 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated PTE and represents less than 25% of the abated dose.
Eu - 152	Eu - 154 5.20E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238 3.50E+03 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 4.90E+04 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pu - 240 1.20E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 241 6.50E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90 3.40E+07 Contributes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated	

PTE and represents less than 25% of the abated dose.	Tc - 99		Th - 229
Th - 232	U - 232		U - 233
U - 234	U - 235		U - 236
U - 238	Y - 90	3.40E+07	Zr - 93
	Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.		

4) WDOH APPROVAL-Log Approval TWINS
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms. (WAC 246-247-080(7))

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed using the release fraction for the tank inventory of 8.0 E-5.

6) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137 and Sr-90 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI. (WAC 246-247-110(8))

7) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 7.5 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series. If the final HEPA filter in the system exceeds 7.5 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels.

8) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork between the deentrainer and heater, along with the filter housing shall be insulated.

9) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on the applicable requirements from ASME N510 or ASME N511, and shall have a minimum efficiency of 99.95%.
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
(WAC 246-247-075(2))

10) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity is not directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained so that the relative humidity remains below 70%, based on psychometric charts and engineering calculations. Daily monitoring is not required over weekends and holidays when no waste disturbing activities are occurring.

11) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters.

12) ABATEMENT TECHNOLOGY-Condensate Control
The condensate collection system shall be operated and maintained to ensure confinement of tank headspace gases by preventing bypass of the HEPA filters through the condensate drain lines. This system should be operated and maintained to ensure confinement of tank headspace gases and be protective of the HEPA filtration system by maintaining seal pot levels.

13) STANDARDS-Leak Testing of New or Altered Ductwork
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement of in kind

components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration. (WAC 246-247-075(2))

14) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field Check Requirements. (WAC 246-247-075(2))

15) CONTAMINATION CONTROL-Active Ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging), SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If active ventilation is not available, due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval.

Emission Unit ID: 737

200E P-241C103-001

241-C-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.42 ft. 1.65 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-C-103 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1137

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 738

200E P-244A-002

244-A Primary HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-A DCRT

Emission Unit Information

Stack Height: 4.50 ft. 1.37 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the double container receiver tank (DCRT) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
244-A-Primary DCRT Radial Breather Filter Operation (Replaced NOC 882)	AIR 17-710	7/27/2017	1246

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 244-A DCRT is located west of the 241-AN tank farm in the 200 east area. The catch tank and the concrete pit containing the tank define the annulus space. The tank has been fitted with a ventilation breather filter which serves as a static vent for instrument air injected for operating of liquid measuring devices called weight-factor dip tubes.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227

	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

10) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 740

200E P-244BX-002

244-BX Primary HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-BX-DCRT

Emission Unit Information

Stack Height: 5.08 ft. 1.55 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the double container receiver tank (DCRT) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
244-BX Primary DCRT Radial Breather Filter Operation (Replaced NOC 883)	AIR 17-710	7/27/2017	1248

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 244-BX DCRT is located east of the 241-BX Tank Farm in the 200 east area. The catch tank and the concrete pit containing the tank define the annulus space. The tank and annulus have been fitted with ventilation breather filters which serve as static vents for instrument air injected for operating of liquid measuring devices called weight-factor dip tubes.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243

Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 742

200W P-244S-002

244-S Primary HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244 S-DCRT

Emission Unit Information

Stack Height: 2.88 ft. 0.88 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the double container receiver tank (DCRT) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
244-S Primary DCRT Radial Breather Filter Operation (Replaced NOC 884)	AIR 17-710	7/27/2017	1251

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 244-S DCRT is located south of the 241-SY Tank Farm in the 200 west area. The catch tank and the concrete pit containing the tank define the annulus space. The tank and annulus have been fitted with ventilation breather filters which serve as static vents for instrument air injected for operating of liquid measuring devices called weight-factor dip tubes.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227

	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 744

200W P-244TX-002

244-TX Primary HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-TX DCRT

Emission Unit Information

Stack Height: 4.08 ft. 1.24 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the double container receiver tank (DCRT) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
244-T Primary DCRT Radial Breather Filter Operation (Replaced NOC 885)	AIR 17-710	7/27/2017	1253

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 244-TX DCRT is located north of the 241-TX Tank Farm in the 200 west area. The catch tank and the concrete pit containing the tank define the annulus space. The tank and annulus have been fitted with ventilation breather filters which serve as static vents for instrument air injected for operating of liquid measuring devices called weight-factor dip tubes.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227

	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 749

200 W-296P048-001

296-P-48

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 40.00 ft. 12.19 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 38.22 ft/second. 11.65 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Demister	1	
	Heater	1	
	Prefilter	1	
	HEPA Filter Stages/Banks	2	In series, one filter per stage/bank
	Fan	1	500 cfm

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, Am-241, Pu-239/240, Total Alpha, Total Beta	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit, also known as POR03, is a skid/mobile type portable exhauster used to support Tank Farm operations, such as, but not limited to waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and construction and operational support activities. The emission unit is a portable exhauster that operate intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-P-48 Operation - Phase II Waste Retrieval and Closure (Replaces NOC 825)	AIR 15-806	7/29/2015	940

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from tanks at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped to a receiver tank, staging tank, storage double shell tank (DST), or other staging/storage vessel associated with the supplemental treatment, packaging, or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUICING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving DST, recirculated supernatant/water, chemical agent, or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities. The vacuum waste retrieval system is introduced into the tanks by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel, or a staging single shell tank (SST), storage DST, or other staging/storage vessels associated with supplemental treatment, packaging, or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the tanks. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B, and 241-T Tank Farms, a vacuum retrieval process tank, staging tank, staging SST, storage DST, or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the tank being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some tanks. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with

the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST, or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste. The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non leaker tanks, and 2) a vacuum retrieval option is intended for retrieval of assumed leaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 241 2.30E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Am - 243 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ba - 137 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	C - 14 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cd - 113 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Cm - 242 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 244 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Co - 60 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 134 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 137 2.10E+06 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE
Eu - 152 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 154 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
H - 3 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	I - 129 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Nb - 93 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ni - 59 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ni - 63 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Np - 237 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pa - 231 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 5.30E+03 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE
Pu - 240 1.20E+02 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Pu - 241 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ra - 226 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ra - 228 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ru - 106 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sb - 125 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Se - 79 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sm - 151 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sn - 126 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sr - 90 5.50E+06 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Tc - 99 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Th - 229 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Th - 232 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 232 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 234 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 235 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
U - 236 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Y - 90 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Zr - 93 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

4) RELEASE RATES-WDOH Log Approval
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms (WAC 246-247-080(7)).

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed (tank inventory and supernate) using the release fraction for the tank inventory of 1.0 E-3 for tank inventory and 8.0 E-5 for supernate (WAC 246-247-040(5) and WAC 246-247-060(5)).

6) WDOH ALTERNATE APPROVAL-Non Destructive Analysis Method
A pre-operational Non Destructive Analysis (NDA) of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the in-service date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Standards
General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations. (WAC 246-247-040(5) and WAC 246-247-060(5)).

8) WDOH NOTIFICATION-Leak Testing Cannot be Performed
If new or altered section of ductwork cannot be tested due to tie-ins, WDOH will be notified (WAC 246-247-040(5) and WAC 246-247-060(5)).

9) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137, Sr-90, Pu-239/240, and Am-241 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI when a unit is deployed or redeployed (WAC 246-247-040(5) and WAC 246-247-110(8)).

10) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels (WAC 246-247-040(5) and WAC 246-247-060(5)).

11) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Contitions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single shell tank due to structural concerns. The justification for structural concerns with the single shell tank shall be documented and provided to WDOH upon request. (WAC 246-247-040(5) and WAC 246-247-060(5))

12) WDOH NOTIFICATIONS-High Reading on Weekly Smear Surveys
Monitoring of breather filters during retrieval activities shall consist of weekly smear surveys on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent. Levels above 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha shall be reported to WDOH. (WAC

246-247-040(5) and WAC 246-247-060(5))

13) STANDARDS-Startup Leak Testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

14) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field check requirements (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

15) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on ASME N510 and ASME N511, and shall have a minimum efficiency of 99.95% (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
•Relocating the ventilation system exhauster

16) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity cannot be directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained, based on psychometric charts and engineering calculations, so that the relative humidity remains below 70%. Daily Monitoring is not required over weekends and holidays when no waste disturbing activities are occurring (WAC 246-247-040(5) and WAC 246-247-060(5)).

17) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is also monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters (WAC 246-247-040(5)).

18) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing, shall be insulated (WAC 246-247-040(5) and WAC 246-247-060(5)).

19) ABATEMENT TECHNOLOGY- Ventilation System Exhauster Suspension from Active Service
The following will be implemented when a ventilation system exhauster that has been connected to a radioactive source is shut down and placed in suspension from active service. The following items will be completed 90 days after suspension from active service. Suspension from active service begins when the permit required preventative maintenance tasks are suspended or 365 days from the last day of operation, whichever is sooner.
•Isolate (e.g., valve or blank off) the ventilation system exhauster unit from the source of radioactivity.
•Isolate (e.g., valve or blank off) the source of radioactivity (e.g., tank) or establish an alternative flow path through a registered emission point (e.g., passive filter or powered exhauster).
•Isolate the flow path downstream of the last stage of HEPA filtration by capping the stack or alternative location if the stack has been removed.
•Provide written notification to WDOH documenting completion of the above.
During suspension from active service, the monitoring and associated recordkeeping are not required to be conducted. In addition, the abatement and monitoring system testing (e.g., aerosol testing of the HEPA filters), maintenance, calibration, field checks, and the associated recordkeeping are not required to be conducted (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

20) ABATEMENT TECHNOLOGY-Ventilation System Exhauster Return to Active Service
The ventilation system exhauster will be evaluated for its ability to meet the regulatory requirements to operate prior to placing the exhauster back in service:
•Verify that parts removed during suspension from active service have been replaced-in-kind and the unit has been returned to full function.
•Conduct abatement and monitoring system inspections and field checks.
•Verify that the abatement and monitoring system testing, maintenance, and calibration have been completed.
(Note: some testing, maintenance, and calibration can only be completed when the exhauster is running.) The CAM and sampling system are to be operated during aerosol testing.

WDOH will be notified at least seven calendar days prior to conducting operational testing of the ventilation system exhauster (WAC 246-247-040(5) and WAC 246-247-060(5)).

21) CONTAMINATION CONTROL-Max Operating Pressure
During waste retrieval operations, the maximum pressure for any waste retrieval method shall not exceed 37,000 psig (WAC 246-247-040(5) and WAC 246-247-060(5)).

22) CONTAMINATION CONTROL-Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading (WAC 246-247-040(5) and WAC 246-247-060(5)).

23) CONTAMINATION CONTROL-Exhauster Alternate Usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank (WAC 246-247-040(5) and WAC 246-247-060(5)).

24) CONTAMINATION CONTROL-Active ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 751

200E P-241AZ301-001

241-AZ-301

This is a MINOR, PASSIVELY ventilated emission unit.

241-AZ TANK FARM

Emission Unit Information

Stack Height: 3.83 ft. 1.17 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Catch Tank to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-AZ-301 Catch Tank Radial Breather Filter Operation	AIR 17-710	7/27/2017	1239

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 241-AZ-154 catch tank receives waste from the AZ-702 facility.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 755

200W DVS - Active

Mobile Drum Venting System (Active Ventilation)

This is a MINOR, ACTIVELY ventilated emission unit.

TRU Waste Retrieval

Emission Unit Information

Stack Height: ft. m. Stack Diameter 0.10 ft. 0.03 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Type Filter	1	Shall be a Nucfilter or equivalent filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		TOTAL ALPHA TOTAL BETA TOTAL GAMMA	End of each shift of operation

Sampling Requirements Smears of the exhaust vent at the end of each shift of operation.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for the TRU retrieval project Drum Venting Systems support decontamination and decommissioning operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Mobile Drum Venting System (Active Vent) Operation (Replaces NOC 804)	AIR 16-1220	12/19/2016	1035

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.90E-06 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Transuranic waste retrieval involves the processes for removing and dispositioning buried suspect transuranic mixed low-level radioactive waste (hereafter called TRU waste) from Hanford Site burial trenches for storage or disposal at other approved locations. Dispositioning is the orderly administration and handling of waste (including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys.

See the following for a detailed description of specific controls/conditions for each EU associated with the Transuranic Waste Retrieval Project:

EU 455 Hanford Sitewide W-PORTEX-007
EU 1440 200 Area Diffuse/ Fugitive; Operation of the Transuranic Waste Retrieval Project

EU 755 Mobile Drum Venting System (Active Ventilation) (MDVS)
EU 756 Mobile Drum Venting System (Passive Ventilation) (MDVS)
EU 1181 Categorical Drum Venting System 2 (DVS2)
EU 1322 Portable Enclosure System #1 (PES)
EU 1326 Vapor Extraction System (VES)
EU 1327 Next Generation Retrieval (NGR)

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 7.70E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.30E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.
See condition; Release rates: Dart and other Venting Systems.

B/G - 0	1.92E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.
See condition; Release rates: Dart and other Venting Systems.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) CONTAMINATION CONTROL - Post Filter Installation
The top of the drum shall be surveyed while inside the DVS, after installation of the NucFil® filter. If removable contamination is found, the drum lid shall be decontaminated before removal from the DVS. The drum shall be surveyed prior to leaving or immediately after removal from the DVS. Once removed from the DVS, the drum must be immediately decontaminated or contained such that the drum is free of removable contamination (i.e., less than 20 dpm/ 100 cm^2 alpha and less than 1000 dpm/100 cm^2 beta/gamma). Decontamination at the LLBG is attempted in a graded approach (dry rags, wet rags, decontamination solutions, fixatives, or over packing if other methods prove unsuccessful). (WAC 246-247-040(5) and WAC 246-247-060(5))

5) WDOH NOTIFICATION - Loss of Containment
WDOH will be notified per WAC 246-247-080(5) via email or the established procedures in the Environmental Notification program if a loss of containment occurs (dropping, spilling, puncturing a container, or otherwise encountering loss of integrity where contamination escapes containment), which exceeds 100,000 dpm/100 cm^2 beta/gamma or 2,000 dpm/100 cm^2 alpha removable contamination. (WAC 246-247-040(5) and WAC 246-247-060(5))

6) ALTERNATIVE RELEASE RATE APPROVAL, RELEASE RATES - Installation of Drum Vents
These alternative release fractions are approved for this emission unit.

A maximum of 9,000 containers of waste will be processed per year using the MDVS and/or DVS2s venting systems. The processing rate is designed to reflect potential emissions during an average handling time of 60 minutes per container. One drum is processed at a time per DVS or DVS2. Using a release fraction of 1.0 E-03 for particulates and a time factor of 1.03 (60 minutes per container multiplied by 9,000 containers and divided by 526,000 minutes per year).

The predicted release rate from the MDVS (active vent) without any emissions control equipment is 2.1 E-02 Ci/year and the predicted release rate with emissions control equipment is 1.0 E-05 Ci/year. The predicted release rates for the representative radionuclides Am-241+Progeny and Cs-137+Progeny are as follows:

Unabated PTE;	Am-241+Progeny	1.3E-03 Ci/yr	:	Cs-137+Progeny	1.9E-02 Ci/yr
Abated PTE	Am-241+Progeny	6.4E-07 Ci/y	:	Cs-137+Progeny	9.6E-06 Ci/yr

The predicted release rate (unabated) for using the MDVS (passive vent) without any emissions control equipment is 2.2E-05 Ci/yr and the predicted release rate (abated) with emissions control equipment is 2.2E-05 Ci/yr. The predicted release rates for the representative radionuclides Am 241+Progeny and Cs-137+Progeny are as follows:

Unabated PTE;	Am-241+Progeny	4.3E-07 Ci/yr	:	Cs-137+Progeny	2.2E-05 Ci/yr
Abated PTE	Am-241+Progeny	4.3E-07 Ci/y	:	Cs-137+Progeny	2.2E-05 Ci/yr

The passive vent of the MDVS exhausts potential emissions from the use of the HEPA vacuum mounted in the test chamber to collect metal filings after installation of a Nucfil® or equivalent filter. Release rates are calculated by multiplying surface area vacuumed by the contamination level. An estimate of the release rate is calculated by assuming the surface area of the boot that covers the drum lid during the filter installation process (8.3 square inches) multiplied by 9,000 drums with an average contamination level of 10,000 dpm/100 cm^2 beta/gamma and 200 dpm/100 cm^2 alpha. Using a release fraction of 1.0 for the HEPA vacuum use, the potential release rates from using the DVS is 4.3E-7 Ci/yr americium-241 and 2.2E-05 Ci/yr cesium-137. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

7) ALTERNATIVE APPROVAL - Annual Replacement
The system shall be built to meet NQA-1 requirements and shall be aerosol tested annually using ANSI N-510 as guidance for non-ANSI N-509 systems. If in-field aerosol testing is not feasible, an approved alternative is given to replace the filters on an annual basis with the manufacturer tested and certification of HEPA filter with a tested rating of 99.97% efficiency. Records of this testing shall be maintained on file. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

8) PROCESS DESCRIPTION - Venting of Containers
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

All work will be performed to meet ALARA practices and will be conducted according to applicable operating procedures, radiological control procedures, and radiological work permit (RWPs).
Vent filters will continue to be installed in designated containers via one of the drum venting systems described in this process description. These systems will ensure personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid or puncturing the lid with a filter dart (using Dart System). Container venting systems are described in the following text. Designated drums slated for venting will be vented with the Mobile Drum Venting System (MDVS), Drum Venting System 2 (DVS2), or other venting methods. (WAC 246-247-040(5) and WAC 246-247-060(5))

9) PROCESS DESCRIPTION - MDVS
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The MDVS is enclosed in a trailer containing equipment allowing an operator to sample or vent the drum and install a NucFil® or equivalent filter. Potential emissions from MDVS operations are point source emissions controlled as described in Process Description: Venting of Containers, MDSV. Inside the MDVS trailer, bulging or potentially pressurized drums may be overpacked, placed in restraints and then vented. (WAC 246-247-040(5) and WAC 246-247-060(5))

10) WDOH NOTIFICATION - Drum Vent Failure
The department shall be notified via email or the established procedures in the Environmental Notification program within 24 hours of all drum vents that fail to be installed properly and smears show >2,000 dpm/100 cm^2 alpha or

>100,000 dpm/100 cm^2 beta/gamma removable contamination (an example of a "failure" is a pressure release that blows past the seat of the boot or a deflagration). (WAC 246-247-040(5) and WAC 246-247-060(5))

11) CONTAMINATION CONTROL - Removable Contamination
Fixatives or other controls will be employed if removable contamination levels (other than spot contamination) exceed 100,000 dpm/100 cm^2 beta/gamma or exceed 2,000 dpm/100 cm^2 alpha. (WAC 246-247-040(5) and WAC 246-247-060(5))

12) ABATEMENT TECHNOLOGY - Mobile Drum Venting System
The MDVS has a testable HEPA type filter for all emissions resulting from screening headspace gas sampling (HSGS) for hydrogen content and Nucfil® or equivalent filter installation. Metal filings or other residual cuttings from the drilling/filter installation process are removed from the drum lid with a HEPA vacuum. The test compartment is ventilated with a HEPA type filter and is designed to withstand a deflagration as described in the performance specification for this venting system (HNF 12180, Venting System for Low Level Burial Grounds Performance Specification).

The average annual flow for the exhaust port for the venting and HSGS operations is approximately 1 E- 4 meters ^3 /s. (consisting of a continuous flow in the milliliter per second range, with intermittent spikes in the liter per second range). The HEPA vacuum exhausts intermittently into the test chamber (at less than 300 cfm or 1.4 E-1 meters^3 /s.). (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 756

200W DVS - Passive

Mobile Drum Venting System (Passive Vent)

This is a MINOR, PASSIVELY ventilated emission unit.

TRU Waste Retrieval

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Type Filter	1	Shall be a Nucfilter or equivalent filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		TOTAL ALPHA TOTAL BETA TOTAL GAMMA	End of each shift of operation.

Sampling Requirements Smears of the exhaust vent at the end of each shift of operation.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for the TRU retrieval project Drum Venting Systems support decontamination and decommissioning operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Mobile Drum Venting System (Passive Vent) Operation (Replaces NOC 804)	AIR 16-1221	12/19/2016	1036

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.90E-06 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Transuranic waste retrieval involves the processes for removing and dispositioning buried suspect transuranic mixed low-level radioactive waste (hereafter called TRU waste) from Hanford Site burial trenches for storage or disposal at other approved locations. Dispositioning is the orderly administration and handling of waste (including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys.

See the following for a detailed description of specific controls/conditions for each EU associated with the Transuranic Waste Retrieval Project:

EU 455 Handford Sitewide W-PORTEX 007
EU 1440 200 Area Diffuse/ Fugitive; Operation of the Transuranic Waste Retrieval Project
EU 755 Mobile Drum Venting System (Active Ventilation) (MDVS)
EU 756 Mobile Drum Venting System (Passive Ventilation) (MDVS)
EU 1181 Categorical Drum Venting System 2 (DVS2)
EU 1322 Portable Enclosure System #1 (PES)

EU 1326 Vapor Extraction System (VES)
EU 1327 Next Generation Retrieval (NGR)

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.90E-06 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	4.30E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.
See condition; Alternate Release Rate Approval, Release Rates: Installation of Drum Vents.

B/G - 0	2.20E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.
See condition; Alternate Release Rate Approval, Release Rates: Installation of Drum Vents.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) CONTAMINATION CONTROL - Post Filter Installation
The top of the drum shall be surveyed while inside the DVS, after installation of the NucFil® filter. If removable contamination is found, the drum lid shall be decontaminated before removal from the DVS. The drum shall be surveyed prior to leaving or immediately after removal from the DVS. Once removed from the DVS, the drum must be immediately decontaminated or contained such that the drum is free of removable contamination (i.e., less than 20 dpm/ 100 cm^2 alpha and less than 1000 dpm/100 cm^2 beta/gamma). Decontamination at the LLBG is attempted in a graded approach (dry rags, wet rags, decontamination solutions, fixatives, or over packing if other methods prove unsuccessful). (WAC 246-247-040(5) and WAC 246-247-060(5))

5) ALTERNATIVE RELEASE RATE APPROVAL, RELEASE RATES - Installation of Drum Vents
These alternative release fractions are approved for this emission unit

A maximum of 9,000 containers of waste will be processed per year using the MDVS and/or DVS2s venting systems. The processing rate is designed to reflect potential emissions during an average handling time of 60 minutes per container. One drum is processed at a time per DVS or DVS2. Using a release fraction of 1.0 E-03 for particulates and a time factor of 1.03 (60 minutes per container multiplied by 9,000 containers and divided by 526,000 minutes per year),
The predicted release rate from the MDVS (active vent) without any emissions control equipment is 2.1 E-02 Ci/year and the predicted release rate with emissions control equipment is 1.0 E-05 Ci/year. The predicted release rates for the representative radionuclides Am-241+Progeny and Cs-137+Progeny are as follows:

Unabated PTE;	Am-241+Progeny	1.3E-03 Ci/yr	:	Cs-137+Progeny	1.9E-02 Ci/yr
Abated PTE	Am-241+Progeny	6.4E-07 Ci/y	:	Cs-137+Progeny	9.6E-06 Ci/yr

The predicted release rate (unabated) for using the MDVS (passive vent) without any emissions control equipment is 2.2E-05 Ci/yr and the predicted release rate (abated) with emissions control equipment is 2.2E-05 Ci/yr. The predicted release rates for the representative radionuclides Am 241+Progeny and Cs-137+Progeny are as follows:

Unabated PTE;	Am-241+Progeny	4.3E-07 Ci/yr	:	Cs-137+Progeny	2.2E-05 Ci/yr
Abated PTE	Am-241+Progeny	4.3E-07 Ci/y	:	Cs-137+Progeny	2.2E-05 Ci/yr

The passive vent of the MDVS exhausts potential emissions from the use of the HEPA vacuum mounted in the test

chamber to collect metal filings after installation of a Nucfil® or equivalent filter. Release rates are calculated by multiplying surface area vacuumed by the contamination level. An estimate of the release rate is calculated by assuming the surface area of the boot that covers the drum lid during the filter installation process (8.3 square inches) multiplied by 9,000 drums with an average contamination level of 10,000 dpm/100 cm^2 beta/gamma and 200 dpm/100 cm^2 alpha. Using a release fraction of 1.0 for the HEPA vacuum use, the potential release rates from using the DVS is 4.3E-7 Ci/yr americium-241 and 2.2E-05 Ci/yr cesium-137. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

6) WDOH NOTIFICATION - Drum Vent Failure
The department shall be notified via email or the established procedures in the Environmental Notification program within 24 hours of all drum vents that fail to be installed properly and smears show >2,000 dpm/100 cm^2 alpha or >100,000 dpm/100 cm^2 beta/gamma removable contamination (an example of a "failure" is a pressure release that blows past the seat of the boot or a deflagration). (WAC 246-247-040(5) and WAC 246-247-060(5))

7) PROCESS DESCRIPTION - Venting of Containers
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

All work will be performed to meet ALARA practices and will be conducted according to applicable operating procedures, radiological control procedures, and radiological work permit (RWPs).
Vent filters will continue to be installed in designated containers via one of the drum venting systems described in this process description. These systems will ensure personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid or puncturing the lid with a filter dart (using Dart System). Container venting systems are described in the following text. Designated drums slated for venting will be vented with the Mobile Drum Venting System (MDVS), Drum Venting System 2 (DVS2), or other venting methods. (WAC 246-247-040(5) and WAC 246-247-060(5))

8) PROCESS DESCRIPTION - MDVS
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The MDVS is enclosed in a trailer containing equipment allowing an operator to sample or vent the drum and install a Nucfi®l or equivalent filter. Potential emissions from MDVS operations are point source emissions controlled as described in VENTING OF CONTAINERS, MDSV. Inside the MDVS trailer, bulging or potentially pressurized drums may be overpacked, placed in restraints and then vented. (WAC 246-247-040(5) and WAC 246-247-060(5))

9) ABATEMENT TECHNOLOGY - MDVS
The MDVS has a testable HEPA type filter for all emissions resulting from screening headspace gas sampling (HSGS) for hydrogen content and Nucfil® or equivalent filter installation. Metal filings or other residual cuttings from the drilling/filter installation process are removed from the drum lid with a HEPA vacuum. The test compartment is ventilated with a HEPA type filter and is designed to withstand a deflagration as described in the performance specification for this venting system (HNF 12180, Venting System for Low Level Burial Grounds Performance Specification).
The average annual flow for the exhaust port for the venting and HSGS operations is approximately 1 E- 4 meters ^3 /s. (consisting of a continuous flow in the milliliter per second range, with intermittent spikes in the liter per second range). The HEPA vacuum exhausts intermittently into the test chamber (at less than 300 cfm or 1.4 E-1 meters^3 /s.). (WAC 246-247-040(5) and WAC 246-247-060(5))

10) ALTERNATIVE APPROVAL - Annual Replacement
The system shall be built to meet NQA-1 requirements and shall be aerosol tested annually using ANSI N-510 as guidance for non-ANSI N-509 systems. If in-field aerosol testing is not feasible, an approved alternative is given to replace the filters on an annual basis with the manufacturer tested and certification of HEPA filter with a tested rating of 99.97% efficiency. Records of this testing shall be maintained on file. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

11) CONTAMINATION CONTROL - Removable Contamination
Fixatives or other controls will be employed if removable contamination levels exceed 100,000 dpm/100 cm^2

beta/gamma or exceed 2,000 dpm/100 cm^2 alpha. (WAC 246-247-040(5) and WAC 246-247-060(5))

12) WDOH NOTIFICATION - Deflagration
The test compartment is passively ventilated with a HEPA-type filter and is designed to withstand a deflagration as described in the performance specification for this venting system. If deflagration occurs, all activities associated with this license shall cease and the department shall be notified via email or the established procedures in the Environmental Notification program. (WAC 246-247-040(5) and WAC 246-247-060(5))

13) WDOH NOTIFICATION - Loss of Containment
WDOH will be notified per WAC 246-247-080(5) via email or the established procedures in the Environmental Notification program if a loss of containment occurs (dropping, spilling, puncturing a container, or otherwise encountering loss of integrity where contamination escapes containment), which exceeds 100,000 dpm/100 cm^2 beta/gamma or 2,000 dpm/100 cm^2 alpha removable contamination. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 793

200W 218W4B-Alpha-1 Caisson

200W Alpha 1 Caisson

This is a MAJOR, PASSIVELY ventilated emission unit.

200 West Burial Grounds

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.30 ft. 0.09 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
	40 CFR 61, Appendix B, Method 114.	Total alpha, total beta	Annualy for smears and near field ambient monitoring program.

Sampling Requirements Smear sample upstream of HEPA filter, Near facility monitoring network samples collected and analyzed annually

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities involve operations in support of waste management at the 218-W-4B Caissons

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
200W Alpha 1 Caisson Operation	AIR 15-909	9/21/2015	962

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 8.74E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Underground caissons contain small closed packages (1 to 10 gallon ‘paint cans’) of remote handled (RH) mixed fission product (MFP) and transuranic (TRU) wastes with high levels of radiation. A small percentage of the package lids became unsealed when the packages were dropped down the caisson chute. The caissons are reinforced-concrete cylinders buried approximately 4 meters below grade. The caissons have 0.9 meter diameter inlet chutes that have been offset to eliminate direct radiation shine from the stored wastes and equipped with an inlet chute cap to seal off the secondary pathway for fugitive emissions. The 218-W-4B burial trench contains twelve (12) caissons. This caisson Alpha 1 contains alpha contaminated waste. The caisson is passively vented on a continuous basis allowing the caisson containing radioactive waste to vent the ambient air through a high-efficiency particulate air (HEPA) filter. During filter aerosol testing, the filter leg will be valved such that supply air for the test is drawn from ambient air rather than the caisson airspace.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 8.74E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

B/G - 0	3.63E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.

Cs - 137		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 237		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 239	9.00E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.

Ru - 106		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 90		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 232		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Cs - 137	Np - 237	Pu - 239	Ru - 106	Sr - 90
Th - 232	U - 235	U - 238		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) HEPA FILTER TESTING

HEPA-type breather filters shall be aerosol tested annually (WAC 246-247-030(4)).

5) ALTERNATIVE METHOD APPROVAL

An alternate monitoring method is approved for use for the continuous and PCM monitoring requirements. Annually, a smear will be taken upstream of the HEPA filter as a contamination indicator. If detectable contamination is discovered, a smear will be taken downstream of the HEPA filter as an abatement verification sample. If contamination above 20 dpm/100cm2 alpha or 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, the source of the downstream contamination will be investigated and corrected (WAC 246-247-030(17)).

6) ANNUAL TRENDING OF NEAR FACILITY MONITORING DATA

The near facility monitoring network data for stations N433, N457, N555, and N964 will be trended on an annual basis to verify continued low emissions from the caissons (WAC 246-247-030(17)).

Emission Unit ID: 794

200W 218W4B-Alpha 2 Caisson

200W Alpha 2 Caisson

This is a MAJOR, PASSIVELY ventilated emission unit.

200 West Burial Grounds

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.30 ft. 0.09 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
	40 CFR 61, Appendix B, Method 114.	Total alpha, total beta	Annualy for smears and near field ambient monitoring program.

Sampling Requirements Smear sample upstream of HEPA filter, Near facility monitoring network samples collected and analyzed annually

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities involve operations in support of waste management at the 218-W-4B Caissons

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
200W Alpha 2 Caisson Operation	AIR 15-910	9/21/2015	963

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.77E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Underground caissons contain small closed packages (1 to 10 gallon ‘paint cans’) of remote handled (RH) mixed fission product (MFP) and transuranic (TRU) wastes with high levels of radiation. A small percentage of the package lids became unsealed when the packages were dropped down the caisson chute. The caissons are reinforced-concrete cylinders buried approximately 4 meters below grade. The caissons have 0.9 meter diameter inlet chutes that have been offset to eliminate direct radiation shine from the stored wastes and equipped with an inlet chute cap to seal off the secondary pathway for fugitive emissions. The 218-W-4B burial trench contains twelve (12) caissons. This caisson Alpha 2 contains alpha contaminated waste. The caisson is passively vented on a continuous basis allowing the caisson containing radioactive waste to vent the ambient air through a high-efficiency particulate air (HEPA) filter. During filter aerosol testing, the filter leg will be valved such that supply air for the test is drawn from ambient air rather than the caisson airspace.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.77E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Beta - 0	2.06E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.			
Pu - 239	7.55E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.			
U - 235		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
U - 238		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Pu - 239 U - 235 U - 238

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) HEPA FILTER TESTING

HEPA-type breather filters shall be aerosol tested annually (WAC 246-247-030(4)).

5) ALTERNATIVE METHOD APPROVAL

An alternate monitoring method is approved for use for the continuous and PCM monitoring requirements. Annually, a smear will be taken upstream of the HEPA filter as a contamination indicator. If detectable contamination is discovered, a smear will be taken downstream of the HEPA filter as an abatement verification sample. If contamination above 20 dpm/100cm2 alpha or 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, the source of the downstream contamination will be investigated and corrected (WAC 246-247-030(17)).

.

6) ANNUAL TRENDING OF NEAR FACILITY MONITORING DATA

The near facility monitoring network data for stations N433, N457, N555, and N964 will be trended on an annual basis to verify continued low emissions from the caissons (WAC 246-247-030(17)).

Emission Unit ID: 795

200W 218W4B-Alpha 3 Caisson

200W Alpha 3 Caisson

This is a MAJOR, PASSIVELY ventilated emission unit.

200 West Burial Grounds

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.30 ft. 0.09 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
	40 CFR 61, Appendix B, Method 114.	Total alpha, total beta	Annualy for smears and near field ambient monitoring program.

Sampling Requirements Smear sample upstream of HEPA filter, Near facility monitoring network samples collected and analyzed annually

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities involve operations in support of waste management at the 218-W-4B Caissons

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
200W Alpha 3 Caisson Operation	AIR 15-911	9/21/2015	964

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.20E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Underground caissons contain small closed packages (1 to 10 gallon ‘paint cans’) of remote handled (RH) mixed fission product (MFP) and transuranic (TRU) wastes with high levels of radiation. A small percentage of the package lids became unsealed when the packages were dropped down the caisson chute. The caissons are reinforced-concrete cylinders buried approximately 4 meters below grade. The caissons have 0.9 meter diameter inlet chutes that have been offset to eliminate direct radiation shine from the stored wastes and equipped with an inlet chute cap to seal off the secondary pathway for fugitive emissions. The 218-W-4B burial trench contains twelve (12) caissons. This caissonAlpha 3 contains Alpha contaminated waste. The caisson is passively vented on a continuous basis allowing the caisson containing radioactive waste to vent the ambient air through a high-efficiency particulate air (HEPA) filter. During filter aerosol testing, the filter leg will be valved such that supply air for the test is drawn from ambient air rather than the caisson airspace.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.20E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

B/G - 0	2.27E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.			
Pu - 239	7.82E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.			
Th - 232		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
U - 235		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Pu - 239 Th - 232 U - 233 U - 235 U - 238

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) HEPA FILTER TESTING

HEPA-type breather filters shall be aerosol tested annually (WAC 246-247-030(4)).

5) ALTERNATIVE METHOD APPROVAL

An alternate monitoring method is approved for use for the continuous and PCM monitoring requirements. Annually, a smear will be taken upstream of the HEPA filter as a contamination indicator. If detectable contamination is discovered, a smear will be taken downstream of the HEPA filter as an abatement verification sample. If contamination above 20 dpm/100cm2 alpha or 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, the source of the downstream contamination will be investigated and corrected (WAC 246-247-030(17)).

6) ANNUAL TRENDING OF NEAR FACILITY MONITORING DATA

The near facility monitoring network data for stations N433, N457, N555, and N964 will be trended on an annual basis to verify continued low emissions from the caissons (WAC 246-247-030(17)).

Emission Unit ID: 796

200W 218W4B-Alpha 4 Caisson

200W Alpha 4 Caisson

This is a MAJOR, PASSIVELY ventilated emission unit.

200 West Burial Grounds

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
	40 CFR 61, Appendix B, Method 114.	Total alpha, total beta	Annualy for smears and near field ambient monitoring program.

Sampling Requirements Smear sample upstream of HEPA filter, Near facility monitoring network samples collected and analyzed annually

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities involve operations in support of waste management at the 218-W-4B Caissons

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
200W Alpha 4 Caisson Operation	AIR 15-912	9/21/2015	965

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 8.52E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Underground caissons contain small closed packages (1 to 10 gallon ‘paint cans’) of remote handled (RH) mixed fission product (MFP) and transuranic (TRU) wastes with high levels of radiation. A small percentage of the package lids became unsealed when the packages were dropped down the caisson chute. The caissons are reinforced-concrete cylinders buried approximately 4 meters below grade. The caissons have 0.9 meter diameter inlet chutes that have been offset to eliminate direct radiation shine from the stored wastes and equipped with an inlet chute cap to seal off the secondary pathway for fugitive emissions. The 218-W-4B burial trench contains twelve (12) caissons. This caisson Alpha 4 contains Alpha contaminated waste. The caisson is passively vented on a continuous basis allowing the caisson containing radioactive waste to vent the ambient air through a high-efficiency particulate air (HEPA) filter. During filter aerosol testing, the filter leg will be valved such that supply air for the test is drawn from ambient air rather than the caisson airspace.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 8.52E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
B/G - 0	1.99E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.			

Co - 60		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Np - 237		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Po - 210		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Pu - 239	1.60E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.			
Th - 232		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
U - 233		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
U - 235		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
U - 238		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Co - 60	Np - 237	Po - 210	Pu - 239
Th - 232	U - 233	U - 235	U - 238	

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) HEPA FILTER TESTING

HEPA-type breather filters shall be aerosol tested annually (WAC 246-247-030(4)).

5) ALTERNATIVE METHOD APPROVAL

An alternate monitoring method is approved for use for the continuous and PCM monitoring requirements. Annually, a smear will be taken upstream of the HEPA filter as a contamination indicator. If detectable contamination is discovered, a smear will be taken downstream of the HEPA filter as an abatement verification sample. If contamination above 20 dpm/100cm2 alpha or 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, the source of the downstream contamination will be investigated and corrected (WAC 246-247-030(17)).

6) ANNUAL TRENDING OF NEAR FACILITY MONITORING DATA

The near facility monitoring network data for stations N433, N457, N555, and N964 will be trended on an annual basis to verify continued low emissions from the caissons (WAC 246-247-030(17)).

Emission Unit ID: 798

200W 218W4B-#1 Caisson

200W 1 Caisson

This is a MAJOR, PASSIVELY ventilated emission unit.

200 West Burial Grounds

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.30 ft. 0.09 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
	40 CFR 61, Appendix B, Method 114	Total alpha, total beta	Annually for smears and near field ambient monitoring program.

Sampling Requirements Smear sample upstream of HEPA filter, Near facility monitoring network samples collected and analyzed annually

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities involve operations in support of waste management at the 218-W-4B Caissons

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
200W 1 Caisson Operation	AIR 15-907	9/21/2015	960

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.58E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Underground caissons contain small closed packages (1 to 10 gallon ‘paint cans’) of remote handled (RH) mixed fission product (MFP) and transuranic (TRU) wastes with high levels of radiation. A small percentage of the package lids became unsealed when the packages were dropped down the caisson chute. The caissons are reinforced-concrete cylinders buried approximately 4 meters below grade. The caissons have 0.9 meter diameter inlet chutes that have been offset to eliminate direct radiation shine from the stored wastes and equipped with an inlet chute cap to seal off the secondary pathway for fugitive emissions. The 218-W-4B burial trench contains twelve (12) caissons. This caisson MFP-1 contains beta/gamma contaminated waste. The caisson is passively vented on a continuous basis allowing the caisson containing radioactive waste to vent the ambient air through a high-efficiency particulate air (HEPA) filter. During filter aerosol testing, the filter leg will be valved such that supply air for the test is drawn from ambient air rather than the caisson airspace.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.58E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Beta - 0	1.49E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.			
Ce - 144		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
H - 3		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Pm - 147		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose			
Pu - 239	3.54E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.			
Sr - 90		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose			
Th - 232		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose			
U - 235		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose			
U - 238		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Ce - 144	H - 3	Pm - 147	Pu - 239
Sr - 90	Th - 232	U - 235	U - 238	

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) HEPA FILTER TESTING

HEPA-type breather filters shall be aerosol tested annually (WAC 246-247-030(4)).

5) ALTERNATIVE METHOD APPROVAL

An alternate monitoring method is approved for use for the continuous and PCM monitoring requirements. Annually, a smear will be taken upstream of the HEPA filter as a contamination indicator. If detectable contamination is discovered, a smear will be taken downstream of the HEPA filter as an abatement verification sample. If contamination above 20 dpm/100cm2 alpha or 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, the source of the downstream contamination will be investigated and corrected (WAC 246-247-030(17)).

6) ANNUAL TRENDING OF NEAR FACILITY MONITORING DATA

The near facility monitoring network data for stations N433, N457, N555, and N964 will be trended on an annual

basis to verify continued low emissions from the caissons (WAC 246-247-030(17)).

Emission Unit ID: 799

200W 218W4B-#2 Caisson

200W 2 Caisson

This is a MINOR, PASSIVELY ventilated emission unit.

200 West Burial Grounds

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.30 ft. 0.09 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
	40 CFR 61, Appendix B, Method 114.	Total alpha, total beta	Annualy for smears and near field ambient monitoring program.

Sampling Requirements Smear sample upstream of HEPA filter, Near facility monitoring network samples collected and analyzed annually

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities involve operations in support of waste management at the 218-W-4B Caissons

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
200W 2 Caisson Operation	AIR 15-908	9/21/2015	961

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.26E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Underground caissons contain small closed packages (1 to 10 gallon ‘paint cans’) of remote handled (RH) mixed fission product (MFP) and transuranic (TRU) wastes with high levels of radiation. A small percentage of the package lids became unsealed when the packages were dropped down the caisson chute. The caissons are reinforced-concrete cylinders buried approximately 4 meters below grade. The caissons have 0.9 meter diameter inlet chutes that have been offset to eliminate direct radiation shine from the stored wastes and equipped with an inlet chute cap to seal off the secondary pathway for fugitive emissions. The 218-W-4B burial trench contains twelve (12) caissons. This caisson MFP-2 contains beta/gamma contaminated waste. The caisson is passively vented on a continuous basis allowing the caisson containing radioactive waste to vent the ambient air through a high-efficiency particulate air (HEPA) filter. During filter aerosol testing, the filter leg will be valved such that supply air for the test is drawn from ambient air rather than the caisson airspace.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.26E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

B/G - 0	2.00E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.

Pu - 239	3.29E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.

U - 238

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Pu - 239 U - 238

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) HEPA FILTER TESTING

HEPA-type breather filters shall be aerosol tested annually (WAC 246-247-030(4)).

5) ALTERNATIVE METHOD APPROVAL

An alternate monitoring method is approved for use for the continuous and PCM monitoring requirements. Annually, a smear will be taken upstream of the HEPA filter as a contamination indicator. If detectable contamination is discovered, a smear will be taken downstream of the HEPA filter as an abatement verification sample. If contamination above 20 dpm/100cm2 alpha or 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, the source of the downstream contamination will be investigated and corrected (WAC 246-247-030(17)).

.

6) ANNUAL TRENDING OF NEAR FACILITY MONITORING DATA

The near facility monitoring network data for stations N433, N457, N555, and N964 will be trended on an annual basis to verify continued low emissions from the caissons (WAC 246-247-030(17)).

.

Emission Unit ID: 800

200W 218W4B-#3 Caisson

200W 3 Caisson

This is a MAJOR, PASSIVELY ventilated emission unit.

200 West Burial Grounds

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.30 ft. 0.09 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
	40 CFR 61, Appendix B, Method 114.	Total alpha, total beta	Annualy for smears and near field ambient monitoring program.

Sampling Requirements Smear sample upstream of HEPA filter, Near facility monitoring network samples collected and analyzed annually

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities involve operations in support of waste management at the 218-W-4B Caissons

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
200W 3 Caisson Operation	AIR 15-913	9/21/2015	966

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 8.41E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Underground caissons contain small closed packages (1 to 10 gallon ‘paint cans’) of remote handled (RH) mixed fission product (MFP) and transuranic (TRU) wastes with high levels of radiation. A small percentage of the package lids became unsealed when the packages were dropped down the caisson chute. The caissons are reinforced-concrete cylinders buried approximately 4 meters below grade. The caissons have 0.9 meter diameter inlet chutes that have been offset to eliminate direct radiation shine from the stored wastes and equipped with an inlet chute cap to seal off the secondary pathway for fugitive emissions. The 218-W-4B burial trench contains twelve (12) caissons. This caisson MFP-3 contains beta/gamma contaminated waste. The caisson is passively vented on a continuous basis allowing the caisson containing radioactive waste to vent the ambient air through a high-efficiency particulate air (HEPA) filter. During filter aerosol testing, the filter leg will be valved such that supply air for the test is drawn from ambient air rather than the caisson airspace.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 8.41E-01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

B/G - 0		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ce - 144		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cs - 137		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Pm - 147		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Pu - 238		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Pu - 239	2.48E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.			
U - 235		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
U - 238		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ce - 144 Cs - 137 Pm - 147 Pu - 238 Pu - 239

U - 235 U - 238

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) HEPA FILTER TESTING

HEPA-type breather filters shall be aerosol tested annually (WAC 246-247-030(4))

.

5) ALTERNATIVE METHOD APPROVAL

An alternate monitoring method is approved for use for the continuous and PCM monitoring requirements. Annually, a smear will be taken upstream of the HEPA filter as a contamination indicator. If detectable contamination is discovered, a smear will be taken downstream of the HEPA filter as an abatement verification sample. If contamination above 20 dpm/100cm2 alpha or 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, the source of the downstream contamination will be investigated and corrected (WAC 246-247-030(17)).

6) ANNUAL TRENDING OF NEAR FACILITY MONITORING DATA

The near facility monitoring network data for stations N433, N457, N555, and N964 will be trended on an annual basis to verify continued low emissions from the caissons (WAC 246-247-030(17)).

Emission Unit ID: 801

200W 218W4B-#4 Caisson

200W 4 Caisson

This is a MAJOR, PASSIVELY ventilated emission unit.

200 West Burial Grounds

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.30 ft. 0.09 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
	40 CFR 61, Appendix B, Method 114.	Total alpha, total beta	Annualy for smears and near field ambient monitoring program.

Sampling Requirements Smear sample upstream of HEPA filter, Near facility monitoring network samples collected and analyzed annually

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities involve operations in support of waste management at the 218-W-4B Caissons

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
200W 4 Caisson Operation	AIR 15-914	9/21/2015	967

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.72E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Underground caissons contain small closed packages (1 to 10 gallon ‘paint cans’) of remote handled (RH) mixed fission product (MFP) and transuranic (TRU) wastes with high levels of radiation. A small percentage of the package lids became unsealed when the packages were dropped down the caisson chute. The caissons are reinforced-concrete cylinders buried approximately 4 meters below grade. The caissons have 0.9 meter diameter inlet chutes that have been offset to eliminate direct radiation shine from the stored wastes and equipped with an inlet chute cap to seal off the secondary pathway for fugitive emissions. The 218-W-4B burial trench contains twelve (12) caissons. This caisson MFP-4 contains beta/gamma contaminated waste. The caisson is passively vented on a continuous basis allowing the caisson containing radioactive waste to vent the ambient air through a high-efficiency particulate air (HEPA) filter. During filter aerosol testing, the filter leg will be valved such that supply air for the test is drawn from ambient air rather than the caisson airspace.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 2.72E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

B/G - 0	5.81E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.			
Pu - 239	5.39E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.			
Th - 232		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
U - 235		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
U - 238		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Pu - 239 Th - 232 U - 235 U - 238

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) HEPA FILTER TESTING

HEPA-type breather filters shall be aerosol tested annually (WAC 246-247-030(4)).

5) ALTERNATIVE METHOD APPROVAL

An alternate monitoring method is approved for use for the continuous and PCM monitoring requirements. Annually, a smear will be taken upstream of the HEPA filter as a contamination indicator. If detectable contamination is discovered, a smear will be taken downstream of the HEPA filter as an abatement verification sample. If contamination above 20 dpm/100cm2 alpha or 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, the source of the downstream contamination will be investigated and corrected (WAC 246-247-030(17)).

6) ANNUAL TRENDING OF NEAR FACILITY MONITORING DATA

The near facility monitoring network data for stations N433, N457, N555, and N964 will be trended on an annual basis to verify continued low emissions from the caissons (WAC 246-247-030(17)).

Emission Unit ID: 802

200W 218W4B-#5 Caisson

200W 5 Caisson

This is a MAJOR, PASSIVELY ventilated emission unit.

200 West Burial Grounds

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.30 ft. 0.09 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
	40 CFR 61, Appendix B, Method 114.	Total alpha, total beta	Annualy for smears and near field ambient monitoring program.

Sampling Requirements Smear sample upstream of HEPA filter, Near facility monitoring network samples collected and analyzed annually

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities involve operations in support of waste management at the 218-W-4B Caissons

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
200W 5 Caisson Operation	AIR 15-915	9/21/2015	968

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.54E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Underground caissons contain small closed packages (1 to 10 gallon ‘paint cans’) of remote handled (RH) mixed fission product (MFP) and transuranic (TRU) wastes with high levels of radiation. A small percentage of the package lids became unsealed when the packages were dropped down the caisson chute. The caissons are reinforced-concrete cylinders buried approximately 4 meters below grade. The caissons have 0.9 meter diameter inlet chutes that have been offset to eliminate direct radiation shine from the stored wastes and equipped with an inlet chute cap to seal off the secondary pathway for fugitive emissions. The 218-W-4B burial trench contains twelve (12) caissons. This caisson MFP-5 contains beta/gamma contaminated waste. The caisson is passively vented on a continuous basis allowing the caisson containing radioactive waste to vent the ambient air through a high-efficiency particulate air (HEPA) filter. During filter aerosol testing, the filter leg will be valved such that supply air for the test is drawn from ambient air rather than the caisson airspace.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.54E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

B/G - 0	1.49E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose. Beta/gamma release rate based on Sr-90.			
Cs - 137		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Pu - 239	3.54E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.			
U - 235		Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Cs - 137 Pu - 239 U - 235

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) HEPA FILTER TESTING

HEPA-type breather filters shall be aerosol tested annually (WAC 246-247-030(4)).

5) ALTERNATIVE METHOD APPROVAL

An alternate monitoring method is approved for use for the continuous and PCM monitoring requirements. Annually, a smear will be taken upstream of the HEPA filter as a contamination indicator. If detectable contamination is discovered, a smear will be taken downstream of the HEPA filter as an abatement verification sample. If contamination above 20 dpm/100cm2 alpha or 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, the source of the downstream contamination will be investigated and corrected (WAC 246-247-030(17)).

6) ANNUAL TRENDING OF NEAR FACILITY MONITORING DATA

The near facility monitoring network data for stations N433, N457, N555, and N964 will be trended on an annual basis to verify continued low emissions from the caissons (WAC 246-247-030(17)).

Emission Unit ID: 803

200W 218W4B-#6 Caisson

200W 6 Caisson

This is a MAJOR, PASSIVELY ventilated emission unit.

200 West Burial Grounds

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.30 ft. 0.09 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Filter	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
	40 CFR 61, Appendix B, Method 114	Total alpha, total beta	Annualy for smears and near field ambient monitoring program.

Sampling Requirements Smear sample upstream of HEPA filter, Near facility monitoring network samples collected and analyzed annually.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities involve operations in support of waste management at the 218-W-4B Caissons

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
200W 6 Caisson Operation	AIR 15-916	9/21/2015	969

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.19E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Underground caissons contain small closed packages (1 to 10 gallon ‘paint cans’) of remote handled (RH) mixed fission product (MFP) and transuranic (TRU) wastes with high levels of radiation. A small percentage of the package lids became unsealed when the packages were dropped down the caisson chute. The caissons are reinforced-concrete cylinders buried approximately 4 meters below grade. The caissons have 0.9 meter diameter inlet chutes that have been offset to eliminate direct radiation shine from the stored wastes and equipped with an inlet chute cap to seal off the secondary pathway for fugitive emissions. The 218-W-4B burial trench contains twelve (12) caissons. This caisson MFP-6 contains beta/gamma contaminated waste. The caisson is passively vented on a continuous basis allowing the caisson containing radioactive waste to vent the ambient air through a high-efficiency particulate air (HEPA) filter. During filter aerosol testing, the filter leg will be valved such that supply air for the test is drawn from ambient air rather than the caisson airspace.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.19E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

B/G - 0	2.90E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose. Beta/gamma release rate based on Sr-90.

Co - 60	1.92E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes greater than 0.1 mrem/yr to the MEI, and represents more than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cr - 51		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes greater than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.

Eu - 154		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fe - 59		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 54		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 106		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 125		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 90		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 95		Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Co - 60	Cr - 51	Cs - 134	Cs - 137	Eu - 154
Fe - 59	Mn - 54	Ru - 106	Sb - 125	Sr - 90
Zr - 95				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) HEPA FILTER TESTING

HEPA-type breather filters shall be aerosol tested annually (WAC 246-247-030(4)).

5) ALTERNATIVE METHOD APPROVAL

An alternate monitoring method is approved for use for the continuous and PCM monitoring requirements. Annually, a smear will be taken upstream of the HEPA filter as a contamination indicator. If detectable

contamination is discovered, a smear will be taken downstream of the HEPA filter as an abatement verification sample. If contamination above 20 dpm/100cm2 alpha or 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, the source of the downstream contamination will be investigated and corrected (WAC 246-247-030(17)).

6) ANNUAL TRENDING OF NEAR FACILITY MONITORING DATA

The near facility monitoring network data for stations N433, N457, N555, and N964 will be trended on an annual basis to verify continued low emissions from the caissons (WAC 246-247-030(17)).

Emission Unit ID: 804

200W 218W4B-UNI#1 Caisson

200W UNI1 Caisson

This is a MINOR, PASSIVELY ventilated emission unit.

200 West Burial Grounds

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.30 ft. 0.09 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
	40 CFR 61, Appendix B, Method 114	Total alpha, total beta	Annualy for smears and near field ambient monitoring program.

Sampling Requirements Smear sample upstream of HEPA filter, Near facility monitoring network samples collected and analyzed annually.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities involve operations in support of waste management at the 218-W-4B Caissons

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
200W UNI1 Caisson Operation	AIR 15-917	9/21/2015	970

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.98E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Underground caissons contain small closed packages (1 to 10 gallon ‘paint cans’) of remote handled (RH) mixed fission product (MFP) and transuranic (TRU) wastes with high levels of radiation. A small percentage of the package lids became unsealed when the packages were dropped down the caisson chute. The caissons are reinforced-concrete cylinders buried approximately 4 meters below grade. The caissons have 0.9 meter diameter inlet chutes that have been offset to eliminate direct radiation shine from the stored wastes and equipped with an inlet chute cap to seal off the secondary pathway for fugitive emissions. The 218-W-4B burial trench contains twelve (12) caissons. This caisson UNI 1 contains mixed waste products. The caisson is passively vented on a continuous basis allowing the caisson containing radioactive waste to vent the ambient air through a high-efficiency particulate air (HEPA) filter. During filter aerosol testing, the filter leg will be valved such that supply air for the test is drawn from ambient air rather than the caisson airspace.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.98E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

4) HEPA FILTER TESTING

HEPA-type breather filters shall be aerosol tested annually (WAC 246-247-030(4)).

5) ALTERNATIVE METHOD APPROVAL

An alternate monitoring method is approved for use for the continuous and PCM monitoring requirements. Annually, a smear will be taken upstream of the HEPA filter as a contamination indicator. If detectable contamination is discovered, a smear will be taken downstream of the HEPA filter as an abatement verification sample. If contamination above 20 dpm/100cm2 alpha or 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, the source of the downstream contamination will be investigated and corrected (WAC 246-247-030(17))..

6) ANNUAL TRENDING OF NEAR FACILITY MONITORING DATA

The near facility monitoring network data for stations N433, N457, N555, and N964 will be trended on an annual basis to verify continued low emissions from the caissons (WAC 246-247-030(17)).

Emission Unit ID: 855

200E P-296A046-001

296-A-46

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AW TANK FARM

Emission Unit Information

Stack Height: 27.88 ft. 8.50 m. Stack Diameter 0.84 ft. 0.26 m.

Average Stack Effluent Temperature: 94 degrees Fahrenheit. 34 degrees Celsius.

Average Stack ExhaustVelocity: 47.52 ft/second. 14.48 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	1 bank of prefilters; not required for abatement control.
	HEPA	2	2 HEPAs in series per bank; 2 banks; 1 HEPA per bank required operational.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Y-90, Cs-137, Eu-154, Pu-238, Pu-239, Pu-240, Am-241, Pu-241	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-AW Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-47. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-A-46 Operation (Replaced NOC 809)	AIR 17-105	1/1/2017	1026

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.40E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.10E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-A-46 and 296-A-47 ventilate the 241-AW Double Shell Tank (DST) Farm which consists of six individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks.

The 296-A-46 and 296-A-47 ventilation systems serve to remove heat and serve as containment systems for radioactive particulates present in the tank headspace. They ventilate/remove flammable gases that evolve from the liquid surface in the DSTs. After the air leaves the head space, the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored for radioactivity and sampled for radionuclide particulates.

The exhausters may be shut down for maintenance, testing and sampling purposes to evaluate waste conditions, meteorological effects, and/or ventilation configuration on individual DST ventilation rates.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241 1.70E+05 Contributes GREATER than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137 3.00E+07 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated PTE and represents less than 25% of the abated dose.
Eu - 152	Eu - 154 4.50E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238 3.00E+03 Contributes GREATER than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 4.20E+04 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pu - 240 1.00E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 241 5.50E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90 2.90E+07 Contributes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated	

PTE and represents less than 25% of the abated dose.	Tc - 99		Th - 229
Th - 232	U - 232		U - 233
U - 234	U - 235		U - 236
U - 238	Y - 90	2.90E+07	Zr - 93
	Contributes GREATER than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

4) WDOH APPROVAL-Log Approval TWINS
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms. (WAC 246-247-080(7))

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed using the release fraction for the tank inventory of 8.0 E-5.

6) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137 and Sr-90 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI. (WAC 246-247-110(8))

7) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 7.5 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series. If the final HEPA filter in the system exceeds 7.5 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels.

8) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork between the deentrainer and heater, along with the filter housing shall be insulated.

9) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on the applicable requirements from ASME N510 or ASME N511, and shall have a minimum efficiency of 99.95%.
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
(WAC 246-247-075(2))

10) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity is not directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained so that the relative humidity remains below 70%, based on psychometric charts and engineering calculations. Daily monitoring is not required over weekends and holidays when no waste disturbing activities are occurring.

11) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters.

12) ABATEMENT TECHNOLOGY-Condensate Control
The condensate collection system shall be operated and maintained to ensure confinement of tank headspace gases by preventing bypass of the HEPA filters through the condensate drain lines. This system should be operated and maintained to ensure confinement of tank headspace gases and be protective of the HEPA filtration system by maintaining seal pot levels.

13) STANDARDS-Leak Testing of New or Altered Ductwork
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement of in kind

components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration. (WAC 246-247-075(2))

14) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field Check Requirements. (WAC 246-247-075(2))

15) CONTAMINATION CONTROL-Active Ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging), SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If active ventilation is not available, due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval.

Emission Unit ID: 856

200E P-296A047-001

296-A-47

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AW TANK FARM

Emission Unit Information

Stack Height: 27.88 ft. 8.50 m. Stack Diameter 0.84 ft. 0.26 m.

Average Stack Effluent Temperature: 94 degrees Fahrenheit. 34 degrees Celsius.

Average Stack ExhaustVelocity: 47.52 ft/second. 14.48 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	1 bank of prefilters; not required for abatement control.
	HEPA	2	2 HEPAs in series per bank; 2 banks; 1 HEPA per bank required operational.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Y-90, Cs-137, Eu-154, Pu-238, Pu-239, Pu-240, Am-241, Pu-241	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-AW Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-46. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-A-47 Operation (Replaced NOC 809)	AIR 17-106	1/1/2017	1027

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.40E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.10E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-A-46 and 296-A-47 ventilate the 241-AW Double Shell Tank (DST) Farm which consists of six individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks.

The 296-A-46 and 296-A-47 ventilation systems serve to remove heat and serve as containment systems for radioactive particulates present in the tank headspace. They ventilate/remove flammable gases that evolve from the liquid surface in the DSTs. After the air leaves the head space, the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored for radioactivity and sampled for radionuclide particulates.

The exhausters may be shut down for maintenance, testing and sampling purposes to evaluate waste conditions, meteorological effects, and/or ventilation configuration on individual DST ventilation rates.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241 1.70E+05 Contributes GREATER than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137 3.00E+07 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated PTE and represents less than 25% of the abated dose.
Eu - 152	Eu - 154 4.50E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238 3.00E+03 Contributes GREATER than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 4.20E+04 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pu - 240 1.00E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 241 5.50E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90 2.90E+07 Contributes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated	

PTE and represents less than 25% of the abated dose.	Tc - 99		Th - 229
Th - 232	U - 232		U - 233
U - 234	U - 235		U - 236
U - 238	Y - 90	2.90E+07	Zr - 93
	Contributes GREATER than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

4) WDOH APPROVAL-Log Approval TWINS
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms. (WAC 246-247-080(7))

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed using the release fraction for the tank inventory of 8.0 E-5.

6) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137 and Sr-90 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI. (WAC 246-247-110(8))

7) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 7.5 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series. If the final HEPA filter in the system exceeds 7.5 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels.

8) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork between the deentrainer and heater, along with the filter housing shall be insulated.

9) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on the applicable requirements from ASME N510 or ASME N511, and shall have a minimum efficiency of 99.95%.
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
(WAC 246-247-075(2))

10) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity is not directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained so that the relative humidity remains below 70%, based on psychometric charts and engineering calculations. Daily monitoring is not required over weekends and holidays when no waste disturbing activities are occurring.

11) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters.

12) ABATEMENT TECHNOLOGY-Condensate Control
The condensate collection system shall be operated and maintained to ensure confinement of tank headspace gases by preventing bypass of the HEPA filters through the condensate drain lines. This system should be operated and maintained to ensure confinement of tank headspace gases and be protective of the HEPA filtration system by maintaining seal pot levels.

13) STANDARDS-Leak Testing of New or Altered Ductwork
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement of in kind

components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration. (WAC 246-247-075(2))

14) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field Check Requirements. (WAC 246-247-075(2))

15) CONTAMINATION CONTROL-Active Ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging), SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If active ventilation is not available, due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval.

Emission Unit ID: 885

200 W-296P049-001

296-P-49

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 50.00 ft. 15.24 m. Stack Diameter 0.83 ft. 0.25 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 91.72 ft/second. 27.96 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	
	HEPA Filter Stages/Banks	2	In series. 2 filters per stage/bank.
	Fan	1	3000 cfm

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, Am-241, Pu-239/240, Total Alpha, Total Beta	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit, also known as POR126, is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit is a portable exhauster that operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-P-49 Operation - Phase II Waste Retrieval and Closure (Replaces NOC 825)	AIR 15-807	7/29/2015	941

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from tanks at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped to a receiver tank, staging tank, storage double shell tank (DST), or other staging/storage vessel associated with the supplemental treatment, packaging, or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUICING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving DST, recirculated supernatant/water, chemical agent, or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities. The vacuum waste retrieval system is introduced into the tanks by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel, or a staging single shell tank (SST), storage DST, or other staging/storage vessels associated with supplemental treatment, packaging, or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the tanks. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B, and 241-T Tank Farms, a vacuum retrieval process tank, staging tank, staging SST, storage DST, or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the tank being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some tanks. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360

degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST, or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste. The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non leaker tanks, and 2) a vacuum retrieval option is intended for retrieval of assumed leaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 241 2.30E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Am - 243 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ba - 137 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	C - 14 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cd - 113 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Cm - 242 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 244 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Co - 60 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 134 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 137 2.10E+06 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE
Eu - 152 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 154 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
H - 3 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	I - 129 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Nb - 93 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ni - 59 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ni - 63 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Np - 237 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pa - 231 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 5.30E+03 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE
Pu - 240 1.20E+02 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Pu - 241 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ra - 226 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ra - 228 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ru - 106 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sb - 125 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Se - 79 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sm - 151 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sn - 126 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sr - 90 5.50E+06 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Tc - 99 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Th - 229 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Th - 232 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 232 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 234 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 235 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
U - 236 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Y - 90 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Zr - 93 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

4) RELEASE RATES-WDOH Log Approval
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms (WAC 246-247-080(7)).

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed (tank inventory and supernate) using the release fraction for the tank inventory of 1.0 E-3 for tank inventory and 8.0 E-5 for supernate (WAC 246-247-040(5) and WAC 246-247-060(5)).

6) WDOH ALTERNATE APPROVAL-Non Destructive Analysis Method
A pre-operational Non Destructive Analysis (NDA) of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the in-service date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Standards
General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations. (WAC 246-247-040(5) and WAC 246-247-060(5)).

8) WDOH NOTIFICATION-Leak Testing Cannot be Performed
If new or altered section of ductwork cannot be tested due to tie-ins, WDOH will be notified (WAC 246-247-040(5) and WAC 246-247-060(5)).

9) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137, Sr-90, Pu-239/240, and Am-241 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI when a unit is deployed or redeployed (WAC 246-247-040(5) and WAC 246-247-110(8)).

10) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels (WAC 246-247-040(5) and WAC 246-247-060(5)).

11) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Contitions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single shell tank due to structural concerns. The justification for structural concerns with the single shell tank shall be documented and provided to WDOH upon request. (WAC 246-247-040(5) and WAC 246-247-060(5))

12) WDOH NOTIFICATIONS-High Reading on Weekly Smear Surveys
Monitoring of breather filters during retrieval activities shall consist of weekly smear surveys on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent. Levels above 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha shall be reported to WDOH. (WAC

246-247-040(5) and WAC 246-247-060(5))

13) STANDARDS-Startup Leak Testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

14) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field check requirements (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

15) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on ASME N510 and ASME N511, and shall have a minimum efficiency of 99.95% (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
•Relocating the ventilation system exhauster

16) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity cannot be directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained, based on psychometric charts and engineering calculations, so that the relative humidity remains below 70%. Daily Monitoring is not required over weekends and holidays when no waste disturbing activities are occurring (WAC 246-247-040(5) and WAC 246-247-060(5)).

17) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is also monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters (WAC 246-247-040(5)).

18) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing, shall be insulated (WAC 246-247-040(5) and WAC 246-247-060(5)).

19) ABATEMENT TECHNOLOGY- Ventilation System Exhauster Suspension from Active Service
The following will be implemented when a ventilation system exhauster that has been connected to a radioactive source is shut down and placed in suspension from active service. The following items will be completed 90 days after suspension from active service. Suspension from active service begins when the permit required preventative maintenance tasks are suspended or 365 days from the last day of operation, whichever is sooner.
•Isolate (e.g., valve or blank off) the ventilation system exhauster unit from the source of radioactivity.
•Isolate (e.g., valve or blank off) the source of radioactivity (e.g., tank) or establish an alternative flow path through a registered emission point (e.g., passive filter or powered exhauster).
•Isolate the flow path downstream of the last stage of HEPA filtration by capping the stack or alternative location if the stack has been removed.
•Provide written notification to WDOH documenting completion of the above.
During suspension from active service, the monitoring and associated recordkeeping are not required to be conducted. In addition, the abatement and monitoring system testing (e.g., aerosol testing of the HEPA filters), maintenance, calibration, field checks, and the associated recordkeeping are not required to be conducted (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

20) ABATEMENT TECHNOLOGY-Ventilation System Exhauster Return to Active Service
The ventilation system exhauster will be evaluated for its ability to meet the regulatory requirements to operate prior to placing the exhauster back in service:
•Verify that parts removed during suspension from active service have been replaced-in-kind and the unit has been returned to full function.
•Conduct abatement and monitoring system inspections and field checks.
•Verify that the abatement and monitoring system testing, maintenance, and calibration have been completed.
(Note: some testing, maintenance, and calibration can only be completed when the exhauster is running.) The CAM and sampling system are to be operated during aerosol testing.

WDOH will be notified at least seven calendar days prior to conducting operational testing of the ventilation system exhauster (WAC 246-247-040(5) and WAC 246-247-060(5)).

21) CONTAMINATION CONTROL-Max Operating Pressure
During waste retrieval operations, the maximum pressure for any waste retrieval method shall not exceed 37,000 psig (WAC 246-247-040(5) and WAC 246-247-060(5)).

22) CONTAMINATION CONTROL-Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading (WAC 246-247-040(5) and WAC 246-247-060(5)).

23) CONTAMINATION CONTROL-Exhauster Alternate Usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank (WAC 246-247-040(5) and WAC 246-247-060(5)).

24) CONTAMINATION CONTROL-Active ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 886

200 W-296P050-001

296-P-50

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 50.00 ft. 15.24 m. Stack Diameter 0.83 ft. 0.25 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 91.72 ft/second. 27.96 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when exhauster is in use.
	Heater	1	Operational at all times, when exhauster is in use.
	Prefilter	1	
	HEPA Filter Stages/Banks	2	In series, two filters per stage/bank
	Fan	1	3000 cfm

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, Am-241, Pu-239/240, Total Alpha, Total Beta	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit, also known as POR127, is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit is a portable exhauster that operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-P-50 Operation - Phase II Waste Retrieval and Closure (Replaces NOC 825)	AIR 15-808	7/29/2015	942

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from tanks at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped to a receiver tank, staging tank, storage double shell tank (DST), or other staging/storage vessel associated with the supplemental treatment, packaging, or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUICING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving DST, recirculated supernatant/water, chemical agent, or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities. The vacuum waste retrieval system is introduced into the tanks by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel, or a staging single shell tank (SST), storage DST, or other staging/storage vessels associated with supplemental treatment, packaging, or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the tanks. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B, and 241-T Tank Farms, a vacuum retrieval process tank, staging tank, staging SST, storage DST, or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the tank being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some tanks. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360

degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST, or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste. The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non leaker tanks, and 2) a vacuum retrieval option is intended for retrieval of assumed leaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 241 2.30E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Am - 243 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ba - 137 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	C - 14 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cd - 113 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Cm - 242 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 244 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Co - 60 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 134 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 137 2.10E+06 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE
Eu - 152 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 154 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
H - 3 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	I - 129 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Nb - 93 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ni - 59 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ni - 63 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Np - 237 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pa - 231 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 5.30E+03 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE
Pu - 240 1.20E+02 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Pu - 241 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ra - 226 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ra - 228 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ru - 106 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sb - 125 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Se - 79 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sm - 151 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sn - 126 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sr - 90 5.50E+06 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Tc - 99 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Th - 229 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Th - 232 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 232 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 90

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 93

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

4) RELEASE RATES-WDOH Log Approval
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms (WAC 246-247-080(7)).

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed (tank inventory and supernate) using the release fraction for the tank inventory of 1.0 E-3 for tank inventory and 8.0 E-5 for supernate (WAC 246-247-040(5) and WAC 246-247-060(5)).

6) WDOH ALTERNATE APPROVAL-Non Destructive Analysis Method
A pre-operational Non Destructive Analysis (NDA) of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the in-service date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Standards
General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations. (WAC 246-247-040(5) and WAC 246-247-060(5)).

8) WDOH NOTIFICATION-Leak Testing Cannot be Performed
If new or altered section of ductwork cannot be tested due to tie-ins, WDOH will be notified (WAC 246-247-040(5) and WAC 246-247-060(5)).

9) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137, Sr-90, Pu-239/240, and Am-241 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI when a unit is deployed or redeployed (WAC 246-247-040(5) and WAC 246-247-110(8)).

10) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels (WAC 246-247-040(5) and WAC 246-247-060(5)).

11) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Contitions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single shell tank due to structural concerns. The justification for structural concerns with the single shell tank shall be documented and provided to WDOH upon request. (WAC 246-247-040(5) and WAC 246-247-060(5))

12) WDOH NOTIFICATIONS-High Reading on Weekly Smear Surveys
Monitoring of breather filters during retrieval activities shall consist of weekly smear surveys on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent. Levels above 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha shall be reported to WDOH. (WAC

246-247-040(5) and WAC 246-247-060(5))

13) STANDARDS-Startup Leak Testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

14) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field check requirements (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

15) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on ASME N510 and ASME N511, and shall have a minimum efficiency of 99.95% (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
•Relocating the ventilation system exhauster

16) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity cannot be directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained, based on psychometric charts and engineering calculations, so that the relative humidity remains below 70%. Daily Monitoring is not required over weekends and holidays when no waste disturbing activities are occurring (WAC 246-247-040(5) and WAC 246-247-060(5)).

17) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is also monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters (WAC 246-247-040(5)).

18) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing, shall be insulated (WAC 246-247-040(5) and WAC 246-247-060(5)).

19) ABATEMENT TECHNOLOGY- Ventilation System Exhauster Suspension from Active Service
The following will be implemented when a ventilation system exhauster that has been connected to a radioactive source is shut down and placed in suspension from active service. The following items will be completed 90 days after suspension from active service. Suspension from active service begins when the permit required preventative maintenance tasks are suspended or 365 days from the last day of operation, whichever is sooner.
•Isolate (e.g., valve or blank off) the ventilation system exhauster unit from the source of radioactivity.
•Isolate (e.g., valve or blank off) the source of radioactivity (e.g., tank) or establish an alternative flow path through a registered emission point (e.g., passive filter or powered exhauster).
•Isolate the flow path downstream of the last stage of HEPA filtration by capping the stack or alternative location if the stack has been removed.
•Provide written notification to WDOH documenting completion of the above.
During suspension from active service, the monitoring and associated recordkeeping are not required to be conducted. In addition, the abatement and monitoring system testing (e.g., aerosol testing of the HEPA filters), maintenance, calibration, field checks, and the associated recordkeeping are not required to be conducted (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

20) ABATEMENT TECHNOLOGY-Ventilation System Exhauster Return to Active Service
The ventilation system exhauster will be evaluated for its ability to meet the regulatory requirements to operate prior to placing the exhauster back in service:
•Verify that parts removed during suspension from active service have been replaced-in-kind and the unit has been returned to full function.
•Conduct abatement and monitoring system inspections and field checks.
•Verify that the abatement and monitoring system testing, maintenance, and calibration have been completed.
(Note: some testing, maintenance, and calibration can only be completed when the exhauster is running.) The CAM and sampling system are to be operated during aerosol testing.

WDOH will be notified at least seven calendar days prior to conducting operational testing of the ventilation system exhauster (WAC 246-247-040(5) and WAC 246-247-060(5)).

21) CONTAMINATION CONTROL-Max Operating Pressure
During waste retrieval operations, the maximum pressure for any waste retrieval method shall not exceed 37,000 psig (WAC 246-247-040(5) and WAC 246-247-060(5)).

22) CONTAMINATION CONTROL-Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading (WAC 246-247-040(5) and WAC 246-247-060(5)).

23) CONTAMINATION CONTROL-Exhauster Alternate Usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank (WAC 246-247-040(5) and WAC 246-247-060(5)).

24) CONTAMINATION CONTROL-Active ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 888

Hanford Sitewide

Tanker Loading of Contaminated Waste Water

This is a MINOR, PASSIVELY ventilated emission unit.

Tanker Truck Loading Categorical

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114	Total alpha, total beta	As listed in the following Conditions and Limitations.

Sampling Requirements As listed in the following Conditions and Limitations.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The tanker trucks are designed to receive and temporarily hold low level contaminated liquids for transport to LERF, ETF, and/or DST.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Tanker Truck Loading of Radioactively Contaminated Waste Water	AIR 09-705	7/28/2009	696

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.00E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted. The approved activities are limited to transfer of radioactive waste water (e.g., purgewater, pool cell water, decontamination solutions) from various locations on the Hanford site by mobile tanker trucks. The tanker trucks will be used to transport this wastewater to the Liquid Effluent Retention Facility (LERF), the 200 Areas Effluent Treatment Facility (ETF), and/or to a Double-Shell Tank (DST) located in one of the 200 Area tank farms. The proposed action includes isolated instances where small quantities of wastewater might be transferred to 55 gallon drums or smaller containers, and transported to LERF, the ETF, and/or to a DST. The license is a categorical license under WAC 246-247-060(8). In the text of the license conditions, it should be understood that the term "tanker" or "tanker/drum" or variants of these terms includes smaller containers, so that the license shall apply to loading of tankers, drums, or smaller containers.

The physical and chemical processes associated with tanker truck loading activities are:
- Isotopic analysis of wastewater.
- Tanker truck or truck deployment.
- Hookup of transfer equipment for transfer of wastewater into tanker, drums, or smaller containers.
- Wastewater transfer to the tanker truck, drums, or smaller containers via pumping or vacuum transfer.
- Associated surveys, spill prevention, other radcon activities.
- Decontamination of tanker/drums/smaller containers.
- Decontamination or packaging of transfer equipment for transport.
- Decontamination or packaging of spillage and resulting contamination.

Unloading of the tanker trucks, drums, or smaller containers is not licensed under this approval.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.00E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	3.60E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Any radionuclide on the chart of the nuclides could be encountered during tanker loading operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all beta/gamma is assumed to be Cs-137 and all alpha is assumed to be Am-241 for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

Beta - 0	1.10E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Any radionuclide on the chart of the nuclides could be encountered during tanker loading operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all beta/gamma is assumed to be Cs-137 and all alpha is assumed to be Am-241 for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) At all times, activities shall conform to procedures for prior characterization and handling of radioactive liquid approved in accord with applicable QA program. Prior to commencing liquid transfer into tanker/drum/smaller container:

a) Waste liquid shall be characterized, and acceptability at the LERF, ETF, and DST shall be verified.
b) All transfer line hookups shall be inspected to verify leak-tight connections.
c) Spill prevention measures shall be verified to be in place.
d) Volume of tanker/drum/smaller container contents shall be verified and documented.
e) Seals separating tanker/drum/smaller container contents from environment shall be verified fully functional.

During the loading operation:

f) Surveys shall be performed according to radiation control procedures approved via applicable QA program.
g) Fill rates shall be controlled below 50 cfm.

On completion of the loading operation:

h) All tanker/drum fittings shall be disconnected and closed.
i) All liquid/gas release points on the tanker/drum shall be closed and shall remain closed until commencement of unloading operations at the LERF, ETF, and/or DST.
j) Spill prevention measures shall remain in place until the tanker/drum is closed.
k) The tanker/drum shall be surveyed and if necessary decontaminated before release for transport.
l) Transfer equipment shall be surveyed and if necessary decontaminated or packaged for transport subject to radcon procedures approved in accord with applicable QA program.
m) Spillage shall be surveyed and if necessary decontaminated or packaged for transport and disposal subject to radcon procedures approved in accord with applicable QA program.
n) Volume of tanker/drum contents shall be verified and documented.

The surface contamination release criteria for the vehicle, tanker, drums, and transport equipment shall be documented and approved in accord with an applicable QA program.

(WAC 246-247-040(5))

.

5) Log, Monitoring, and Demonstration of Compliance to Licensed Emission Limit:

a) A single log shall be maintained, reflect each individual loading operation, and be updated after each individual tanker/drum/container is offloaded, so long as the emissions associated with the transferred but un-logged quantity (material residing in partially filled tankers) remain less than 10% of licensed limit, as estimated using the method described in this condition.

b) The log shall record the sum to date of the calendar year's emissions estimated using the method described in this condition for activities herein licensed.

c) The log shall include monthly confirmation that licensed annual emission limits have not been exceeded, that transfer flow rates remain below the limit specified in this license, and identify the radiological work package under which each loading is accomplished.

d) The estimated emissions for each loading operation shall be determined using one of the following methods:

Method 1: From the characterization of the liquid being loaded, gross alpha and gross beta/gamma activities shall be determined. The emission shall be determined using the volume of liquid transferred, an assumed release fraction of 0.001, location-specific dose conversion factors from the latest revision of HNF-3602, assuming gross alpha is 241-Am and gross beta/gamma is 137-Cs

Method 2: From the characterization of the liquid being loaded, a complete isotopic distribution of radionuclides shall be determined. The emission shall be determined using the volume of liquid transferred, an assumed release fraction of 0.001, and location-specific dose conversion factors from the latest revision of HNF-3602 for the known isotopes

(WAC 246-247-040(5), WAC 246-247-080(7), WAC 246-247-075(3))

Emission Unit ID: 894

200W P-241UX302A-001

241-UX-302A

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 3.83 ft. 1.17 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Catch Tank to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-UX-302A Catch Tank Radial Breather Filter Operation (Replaced NOC 895)	AIR 17-710	7/27/2017	1244

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 241-UX-302A catch tank receives waste from the UX-154 diversion box.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 909

200 218-E-12B

218-E-12B

This is a MINOR, FUGITIVE, non-point source emission unit.

200 diffuse/fugitive emissions

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93[b][4][i] & WAC 246-247-075[3]	Hanford Site Near-Facility Environmental Monitoring Ambient Monitoring program		

Sampling Requirements Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Alias: 218-E-12B, 200 East Dry Waste No. 12B, 218-E-12B Burial Ground - Trench 94 Site: Burial Grounds
Waste: Equipment, Mixed, Solid, chemicals, mixed, Solid Area, m2: 171,091.1

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Management of Radiological Contamination at Trench 94	AIR 14-1008	10/27/2014	917

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.21E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The Management of Radiological contamination, including cleanup activities, at Trench 94

Trench 94 is located within the 200 East Area Burial Ground, 218-E-12B. Trench 94 contains submarine and other reactor compartments, as it provides long term disposal of the U.S. Navy defueled reactor compartments.

The design of the trench allows for a wide variety of naturally transferred contamination to be potentially found within the trench due to lack of physical barriers. Forms of naturally transferred contamination include but are not limited to: vegetation (rooted or windblown), animal feces, bird nests, scent marks, burrows, and animals. Due to the potential for conditions involving radioactive vegetation, contaminated soil, mud, nests and feces, continued management of this area is necessary.

Misting, spraying, or fogging will be used to minimize the spread of contamination and potential for airborne particles. Contaminated debris will be collected and packaged in containers for disposal at the Environmental Restoration Disposal Facility or another approved disposal facility.

Radiological contamination and dose rate monitoring is conducted prior to transporting waste containers or packages. All waste containers or packages will be prepared for transport per established procedures.

Specific controls will be in place during cleanup. The following controls are consistent with the 2012 Personal Communication ("Re: Request for Approval: Trench 94/SRC ALARACT Demonstration") amd were developed in accordance with the latest revision of the CH2M HILL Plateau Remediation Company (CHPRC) Radiological Control Mannual, CHPRC Radiological Control procedures, as provided with the application. ALARA principles shall be utilized.

Specific controls will be in place during cleanup. The following controls are consistent with the 2012 Personal Communication ("Re: Request for Approval: Trench 94/SRC ALARACT Demonstration") and were developed in accordance with the latest revision of the CH2M HILL Plateau Remediation Company (CHPRC) Radiological Control Manual, CHPRC Radiological Control procedures, as provided with the application. ALARA

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 2.21E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.77E-08	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate is assumed to be Pu-239. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.			
Am - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
B/G - 0	1.17E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Beta/Gamma release rate is assumed to be Sr-90. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.			
C - 14		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ce - 144		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cm - 244		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Co - 60		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cs - 134		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cs - 137		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Eu - 154		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Eu - 155		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
H - 3		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
I - 129		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
K - 40		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Mn - 54		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

Na - 22	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 94	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Ce - 144	Cm - 244	Co - 60
Cs - 134	Cs - 137	Eu - 154	Eu - 155	H - 3
I - 129	K - 40	Mn - 54	Na - 22	Nb - 94

Np - 237	Pu - 238	Pu - 240	Pu - 241	Ra - 226
Ru - 106	Sb - 125	Se - 79	Sr - 90	Tc - 99
U - 233	U - 234	U - 235	U - 236	U - 238
Zn - 65	Zr - 95			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) WDOH NOTIFICATIONS-Contamination Levels
WDOH will be notified when the following contamination levels are found:
-Direct contamination readings are detected greater than 500,000 disintegrations per minute (dpm)/100 cm^2 alpha and/or 1 rad/hr/100cm^2 beta-gamma are encountered.
-Removable/transferrable contamination levels above 2,000 dpm/100cm^2 alpha or above 100,000 dpm/100cm^2 beta-gamma are encountered. For activities that also include cleanup activities
(WAC 246-247-040(5)),(WAC 246-247-040(6)

5) WDOH NOTIFICATION-Abatement of Removable /Transferrable & Direct Contamination Levels-Cleanup
Exceeding the following contamination limits requires WDOH notification and implementation of additional controls before work may resume.
-Removable/transferrable contamination will be maintained less than a maximum level of 2,200,000 dpm/100cm^2 alpha and/or less than 4 rad/hr/100cm^2 beta gamma.
-Direct contamination levels of 20,000dpm/100cm^2 alpha, and or 1,000,000dpm/100cm^2 beta-gamma
The following additional controls, as described below, shall be implemented before work resumes.
-Soil shall be wetted prior to removal if not already damp
-General work place air monitoring shall be performed during removal activities
-Removed soil and vegetation containing >500,000dpm/100cm^2 beta-gamma or >10,000dpm/100cm^2 alpha will be containerized, or fixative applied, if it is to be left for greater than 48 hours.
(WAC 246-247-040(5))

6) WDOH NOTIFICATION-Submarine and Other Reactor Compartments
WDOH will be notified (under the environmental notification protocol) if the following levels are found in the area from the submarine and other reactor compartments to an area 1,000 ft from the submarine and other reactor compartments:
-Removable/transferrable contamination levels >2,000 disintegrations per minute per 100cm^2 alpha or >100,000 disintegrations per minute per 100 cm^2 beta-gamma
-Direct contamination readings of >500,000 disintegrations per minute per 100 cm^2 alpha and/or 1 rad per hour per 100 cm^2 beta-gamma
If detection is made within overlap with LERF Basin Area, only one notification is required. If the detection is made in an area not managed by Trench 94 or LERF, but within the 1,000 ft area, the party responsible for management of the area where the detection occurred shall make the notification.
(WAC 246-247-040(5)), (WAC 246-247-040(6)

7) ABATMENT DURING CLEANUP ACTIVITIES-Dispersable Contaminated Material Monitoring
-Contamination monitoring, workplace air monitoring, and dose rate monitoring will be conducted during cleanup activities. Routine contamination surveys of contaminated areas will occur.
-During work activities, continuous radiological control technician coverage will be provided.
-Alpha and beta-gamma contamination surveys shall be performed prior to and during activities that have the potential to disturb radioactive contamination, such as removal of nesting material or soil disturbance.
-Annual Apha and beta-gamma contamination surveys shall be performed to confirm the dose rates within the boundaries of each posted radiation area. Records of the annual surveys shall be available for audits.
-In any Contamination Area (CA), High Contamination Area (HCA) or Airborne Radioactivity Area (ARA),

cleanup activities involving dispersible contaminated material shall stop if average wind speeds exceed 10 miles per hour (mph) for elevated work or 20 mph for ground level work, as measured at the work site .
-Suppressants such as water, fixatives, and covers shall be used, as necessary, to control contamination spread. Handheld and/or overhead atomized misting will be performed during work activities where a potential exists to generate airborne radioactivity.
-Atomized misters and fixative sprayers shall be function-checked at the work site prior to commencing work activities. (WAC 246-247-040(5))

8) ABATEMENT TECHNOLOGY-Related Approvals
If a truck-mounted vacuum (i.e., GuzzlerTM) Portable/Temporary Radioactive Air Emission Units (PTRAEU), or high-efficiency particulate air (HEPA) filtered vacuum radioactive air emission unit is used, controls described in the Hanford Site Radioactive Air Emissions License #FF-01, for the Sitewide GuzzlerTM Notice of Construction (NOC) (Emission Unit ID: 476), the PTRAEU NOC (Emission Unit ID: 447), and the Hanford Sitewide W-PORTEX 007 [HEPA vacuums] NOC (Emission Unit ID: 455), respectively, would be followed. (WAC 246-247-040(5))

9) EFFLUENT CONTINOUS MONITORING- Ambient Air Monitoring Network
The 200 Area near-facility ambient air monitoring network shall be used for continuous monitoring. The stations (N967, N973, N498, N972) will also provide indication of potential elevated airborne radioactivity using the frequency and protocol of the Hanford Site Near-Facility Environmental Monitoring Program.
(WAC 246-247-040(5))

10) EFFLUENT CONTINUOUS MONITORING- Chain of Custody
Air sample data shall be analyzed by MSA and ABCASH data shall available to WDOH. The chain of custody shall follow standard protocol for the 200 Area near-facility ambient air monitoring network.
(WAC 246-247-040(5))

11) EFFLUENT MONITORING- Periodic Confirmatory Measurements-Air Monitors
Periodic confirmatory measurements (PCMs) will be made to verify the low emissions. The existing 200 Area network system for near-field monitoring (DOE/RL-91-50, Environmental Monitoring Plan United States Department of Energy Richland Operations Office, as amended) will continue to be used for the PCM mechanism to verify low emissions during Trench 94 radiologically-contaminated material cleanup activities. The 200 Area general fugitive/diffuse emission unit is already approved in WDOH, 2012b for related continuous monitoring). Specific ambient air monitors N-967, N-973, N-498, and N-972 (as identified in WDOH, 2012a, are in close proximity to Trench 94 and will provide indication of potential elevated airborne radioactivity. (WAC 246-247-040(5))

12) MONITORING REQUIREMENTS-Sampling Frequency-Soil Deposition
Annual soil deposition sampling shall be performed in three prominent downwind locations, as determined by the previous year’s wind rose data. (WAC 246-247-040(5))

13) MONITORING-Diffuse and Fugitive-Soil Monitoring Activities
Additional monitoring for diffuse and fugitive emissions will consist of radiological surveys when soil excavation activities are being performed. The survey methods for monitoring are not a direct measurement of effluent emissions. The methods are intended to demonstrate compliance by showing that by being under the contamination levels for which work is controlled, the actual emissions would be inherently below the estimated emissions, which are based on (calculated from) the same contamination levels. (WAC 246-247-040(5))

14) CONTAMINATION CONTROL- Diffuse and Fugitive Activities
The Diffuse/Fugitive Activities Unit at Trench 94 are limited to the following:
-Soil excavation activities
-Fauna and flora transport activities
-Cleanup of bird nesting/droppings
-Work in preparation for reactor compartment placement
-Work during reactor compartment placement
During these activities radiological surveys shall be performed. (WAC 246-247-040(5))

15) CONTAMINATION CONTROL DOCUMENTATION- Submarine and Other Reactor Compartments
A record of rad con reports that were performed during the month (routine, pre-job and during-job surveys). Each instance of anomalous data will be evaluated by a supervisor and entered into a corrective action database for tracking and trending purposes (as required) and shall be available for the audit. (WAC 246-247-040(5))

16) CONTAMINATION CONTROL-Soil Removal
After removal of radiologically contaminated soil, the soil surface radiological contamination levels would be

verified . If contamination is present above identified levels, additional soil may be removed and containerized for disposal or covered or fixed to provide control of the contamination. (WAC 246-247-040(5))

Emission Unit ID: 910

200 E P-241ER311-001

241-ER-311

This is a MINOR, PASSIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 3.83 ft. 1.17 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a catch tank to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-ER-311 Catch Tank Radial Breather Filter Operation	AIR 17-710	7/27/2017	1240

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 241-ER-311 catch tank recieves waste from ER-151 and the ER-152 diversion box

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 912

200E P-244A-003

244-A Annulus HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-A DCRT

Emission Unit Information

Stack Height: 4.42 ft. 1.35 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the double container receiver tank (DCRT) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
244-A-Annulus DCRT Radial Breather Filter Operation (Replaced NOC 886)	AIR 17-710	7/27/2017	1245

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 244-A DCRT is located west of the 241-AN tank farm in the 200 east area. The catch tank and the concrete pit containing the tank define the annulus space. The tank has been fitted with a ventilation breather filter which serves as a static vent for instrument air injected for operating of liquid measuring devices called weight-factor dip tubes.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227

	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

10) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 922

200E P-244BX-003

244-BX Annulus HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-BX-DCRT

Emission Unit Information

Stack Height: 5.33 ft. 1.62 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the double container receiver tank (DCRT) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
244-BX Annulus DCRT Radial Breather Filter Operation (Replaced NOC 887)	AIR 17-710	7/27/2017	1247

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 244-BX DCRT is located west of the 241-BX Tank Farm in the 200 east area. The catch tank and the concrete pit containing the tank define the annulus space. The tank has been fitted with a ventilation breather filter which serves as a static vent for instrument air injected for operating of liquid measuring devices called weight-factor dip tubes

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227

	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 959

200W P-244S-003

244-S Annulus HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244 S-DCRT

Emission Unit Information

Stack Height: 3.21 ft. 0.98 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the double container receiver tank (DCRT) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
244-S Annulus DCRT Radial Breather Filter Operation (Replaced NOC 888)	AIR 17-710	7/27/2017	1250

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 244-S DCRT is located south of the 241-SY Tank Farm in the 200 west area. The catch tank and the concrete pit containing the tank define the annulus space. The tank has been fitted with a ventilation breather filter which serves as a static vent for instrument air injected for operating of liquid measuring devices called weight-factor dip tubes.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227

	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 969

200W P-244TX-003

244-TX Annulus HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-TX DCRT

Emission Unit Information

Stack Height: 3.88 ft. 1.18 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the double container receiver tank (DCRT) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
244-TX Annulus DCRT Radial Breather Filter Operation (Replaced NOC 889)	AIR 17-710	7/27/2017	1252

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 244-TX DCRT is located north of the 241-TX Tank Farm in the 200 west area. The catch tank and the concrete pit containing the tank define the annulus space. The tank and annulus have been fitted with ventilation breather filters which serve as static vents for instrument air injected for operating of liquid measuring devices called weight-factor dip tubes.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227

	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 1128

400 Area Diffuse/Fugitive

400 Area Diffuse/Fugitive Emissions

This is a MINOR, FUGITIVE, non-point source emission unit.

400 Area diffuse/fugitive emissions

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program

Sampling Requirements Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Associated with emissions from operations, deactivation, surveillance and maintenance, and inactive sites in the 400 Area from sources not actively ventilated.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
400 Area Diffuse/Fugitive Emissions Associated with Operations, Deactivation, Surveillance, Maintenance, and Inactive Sites in the 400 Area (Replaces NOC 833)	AIR 15-1107	11/10/2015	977

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.70E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The activity will involve reaction of sodium residuals associated with the Fast Flux Test Facility Project systems and equipment. This activity could be conducted in place or at designated cleaning locations. Typically, the sodium residuals would be reacted with superheated steam. The primary advantages of the superheated steam process (SSP) are that it does not allow condensation to occur and component cleaning can be performed in a shorter time period. Prior to steam injection into the system to be cleaned the steam is heated to ~ 204 C (400 F). The equipment to be cleaned is heated to a minimum of 100 C (212 F) and higher if possible. Most systems will require multiple injection points. As the superheated steam reacts with the metallic sodium, the temperature increases. The temperature is controlled such that the maximum reaction temperature is no greater than ~538 C (1,000 F).

Because of the high initial temperature and the increase of the temperature caused by the reaction, no condensation occurs. The caustic formed is a liquid at the processing temperatures and because it is denser than the liquid sodium, it settles to the bottom of any pools leaving the sodium on top where it is always exposed to the superheated steam. Due to the continued exposure of the molten sodium to the superheated steam, the reaction continues at a constant rate. Superheated steam injection is continued until hydrogen is no

longer being generated. The system is then cooled and rinsed and the fluid is drained from the system.

PERFORM IN PLACE CLEANING OF VESSELS, COMPONENTS, AND LARGE BORE PIPE
A portable/temporary radionuclide air emission unit (PTRAEU) would be used to clean, in place, large bore sodium pipe [greater than or equal to ~20 centimeter (8 inch) diameter], components and vessels in the primary and secondary sodium cooling systems. The PTRAEU also would be used to clean the Interim Decay Storage (IDS) and Fuel Storage Facility (FSF) vessels [Note: Select components in the primary sodium system, and large diameter piping and components in the secondary sodium system may be removed and cleaned in FSF or the Maintenance and Storage Facility (MASF), as described below].

Typically, penetrations into the piping/vessels would be made at appropriate locations using a low speed drill. Existing sodium heating systems would be energized, and piping/vessels heated to liquefy the existing sodium residuals. A PTRAEU would be connected to the penetration points, and used at various locations to inject the superheated steam into plant systems.

The superheated steam would be injected. Hydrogen generation would be monitored to follow the reaction. Sulfuric acid would be added to the resultant process liquid (i.e., sodium hydroxide solution) to reduce the pH to <13. This solution would be routed for offloading to tanker transport for overland transfer to Liquid Effluent Treatment Facility (LERF) and subsequent treatment at 200 Area Effluent Treatment Facility (ETF). If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

REMOVE SMALL BORE PIPE AND COMPONENTS FOR REACTION IN A CLEANING STATION
Small bore piping [<20 centimeter (8 inch) diameter], valves and other components [e.g., core component pots from IDS, fuel storage tubes from FSF, and dump heat exchangers (DHX) tube bundles] may be removed and processed in a proposed stationary cleaning station that would be located in FSF. Mechanical means (e.g., portable saws, pipe cutters) would be used to cut the pipe, valves, and components into manageable size. All heat exchanger tube bundles, which contain multiple parallel flow paths, would be dismantled to ensure effective cleaning.

The proposed FSF stationary cleaning station would consist of a chamber with removable rack for loading piping and components. The piping would be loaded at an angle, allowing the residual sodium to drain to a catch basin when heated before the injection of inert gas and/or reaction medium. The process in the cleaning station would be consistent with the in place process where the resultant waste sodium hydroxide solution is collected, the pH reduced to <13, and transported to the 200 Areas. The FSF is considered an appropriate location due to availability of sufficient floor space, existing overhead crane, available utilities, and proximity to proposed operations. If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

Cleaned piping and components would be disposed of in a Hanford Site solid waste management facility.

REMOVE LARGE COMPONENTS FOR CLEANING
The large diameter cleaning vessel (LDCV) located in the existing MASF could be used for cleaning large components following removal (e.g., primary sodium pumps, intermediate heat exchanger (IHX) tube bundles, and instrument trees). The LDCV could be retrofitted with a new super heated steam supply and associated control system for use in cleaning the aforementioned components. The IHX tube bundles, which contain multiple parallel sodium flow paths, may be dismantled to ensure effective cleaning. Small bore pipe and components also could be cleaned in MASF, if necessary.

OTHER DEACTIVATION ACTIVITIES
Other related routine, continued deactivation activities that could occur as part of the proposed action are: remove/dispose of asbestos; remove/stabilize existing hazards in conjunction with systems and equipment deactivation associated with sodium residuals; remove/recycle/dispose excess deactivated equipment and components; and remove depleted uranium and/or lead shielding.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.70E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	9.00E-15	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Alpha release rate based on Pu-239			
B/G - 0	1.50E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Beta/Gamma release rate based on Cs-137			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ba - 137 m	Co - 60	Cs - 134	Cs - 137	H - 3
Mn - 54	Na - 22	Pu - 239	Ru - 103	Zn - 65

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) OPERATION REQUIREMENTS- Radiological Work Permits/ Work Packages
Operations shall be performed in accordance with the controls specified in radiation work planning documents and/or operating procedures and shall be available for inspection upon request. (WAC 246-247-060(5) and WAC 246-247-080(10))

5) OPERATION REQUIREMENTS- Radiological Control Personnel Support
All activities shall be conducted under the auspices of radiological or health physics control technicians or personnel. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used, as necessary to contain contamination. (WAC 246-247-060(5))

6) OPERATION LIMITATIONS- Sodium
The total amount of sodium reacted from all emission units shall not exceed 4,000 gallons per year with no more than 2,000 gallons challenging a single emission unit. (WAC 246-247-060(5)) and (WAC 246-247-040(5))

7) WDOH NOTIFICATION- Change in PTE Calculations
The department will be notified if radionuclides other than Ba-137m, Co-60, Cs-134, Cs-137, H-3, Mn-54, Na-22, Pu-239, Ru-106, and Zn-65 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI. (WAC 246-247-040(5) and WAC 246-247-110(8))

8) CONTAMINATION CONTROL- Leaks and Spills
Appropriate spill prevention procedures shall be in place to minimize the release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills. (WAC 246-247-060(5))

Emission Unit ID: 1129

200W P-241U301B-001

241-U-301B

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 3.83 ft. 1.17 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Catch Tank to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-U-301B Catch Tank Radial Breather Filter Operation (Replaced NOC 897)	AIR 17-710	7/27/2017	1243

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 241-U-301B catch tank receives waste from U-151, U-152, U-153 and the U-252 diversion box.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 1130

200E P-241AZ154-001

241-AZ-154

This is a MINOR, PASSIVELY ventilated emission unit.

241-AZ TANK FARM

Emission Unit Information

Stack Height: 3.83 ft. 1.17 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a catch tank to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-AZ-154 Catch Tank Radial Breather Filter Operation (Replaces NOC 896)	AIR 17-710	7/27/2017	1238

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 241-AZ-154 catch tank receives waste from the 241-AZ-101 and 241-AZ-102 condensate.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 1176

400

FFTF PTRAEU's

This is a MINOR, ACTIVELY ventilated emission unit.

FAST FLUX TEST FACILITY COMPLEX

Abatement Technology NONE WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Estimates based on sodium residuals reacted.	Ratio of dissolved isotopic sodium.	Prior to transfer; or once a calendar year during active operations.

Sampling Requirements Samples of waste water.

Additional Requirements

Estimates will be based on sample analyses of collected waste water from sodium residuals reaction. The basis for determining the maximum airborne radiological releases would be a 1:1 ratio of dissolved isotopic sodium (i.e., sodium-22) to the calculated curies released.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operations of FFTF PTRAEU to Clean Vessels, Components, and Large Bore Pipe (Replaces NOC 833)	AIR 15-1108	11/10/2015	978

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.70E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The activity will involve reaction of sodium residuals associated with the Fast Flux Test Facility Project systems and equipment. This activity could be conducted in place or at designated cleaning locations. Typically, the sodium residuals would be reacted with superheated steam. The primary advantages of the superheated steam process (SSP) are that it does not allow condensation to occur and component cleaning can be performed in a shorter time period. Prior to steam injection into the system to be cleaned the steam is heated to ~ 204 C (400 F). The equipment to be cleaned is heated to a minimum of 100 C (212 F) and higher if possible. Most systems will require multiple injection points. As the superheated steam reacts with the metallic sodium, the temperature increases. The temperature is controlled such that the maximum reaction temperature is no greater than ~538 C (1,000 F).

Because of the high initial temperature and the increase of the temperature caused by the reaction, no condensation occurs. The caustic formed is a liquid at the processing temperatures and because it is denser than the liquid sodium, it settles to the bottom of any pools leaving the sodium on top where it is always exposed to the superheated steam. Due to the continued exposure of the molten sodium to the superheated steam, the reaction continues at a constant rate. Superheated steam injection is continued until hydrogen is no longer being generated. The system is then cooled and rinsed and the fluid is drained from the system.

PERFORM IN PLACE CLEANING OF VESSELS, COMPONENTS, AND LARGE BORE PIPE
A portable/temporary radionuclide air emission unit (PTRAEU) would be used to clean, in place, large bore sodium pipe [greater than or equal to ~20 centimeter (8 inch) diameter], components and vessels in the primary and secondary sodium cooling systems. The PTRAEU also would be used to clean the Interim Decay Storage (IDS) and Fuel Storage Facility (FSF) vessels [Note: Select components in the primary sodium system, and large diameter piping and components in the secondary sodium system may be removed and cleaned in FSF or the Maintenance and Storage Facility (MASF), as described below].

Typically, penetrations into the piping/vessels would be made at appropriate locations using a low speed drill. Existing sodium heating systems would be energized, and piping/vessels heated to liquefy the existing sodium residuals. A PTRAEU would be connected to the penetration points, and used at various locations to inject the superheated steam into plant systems.

The superheated steam would be injected. Hydrogen generation would be monitored to follow the reaction. Sulfuric acid would be added to the resultant process liquid (i.e., sodium hydroxide solution) to reduce the pH to <13. This solution would be routed for offloading to tanker transport for overland transfer to Liquid Effluent Treatment Facility (LERF) and subsequent treatment at 200 Area Effluent Treatment Facility (ETF). If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

REMOVE SMALL BORE PIPE AND COMPONENTS FOR REACTION IN A CLEANING STATION
Small bore piping [<20 centimeter (8 inch) diameter], valves and other components [e.g., core component pots from IDS, fuel storage tubes from FSF, and dump heat exchangers (DHX) tube bundles] may be removed and processed in a proposed stationary cleaning station that would be located in FSF. Mechanical means (e.g., portable saws, pipe cutters) would be used to cut the pipe, valves, and components into manageable size. All heat exchanger tube bundles, which contain multiple parallel flow paths, would be dismantled to ensure effective cleaning.

The proposed FSF stationary cleaning station would consist of a chamber with removable rack for loading piping and components. The piping would be loaded at an angle, allowing the residual sodium to drain to a catch basin when heated before the injection of inert gas and/or reaction medium. The process in the cleaning station would be consistent with the in place process where the resultant waste sodium hydroxide solution is collected, the pH reduced to <13, and transported to the 200 Areas. The FSF is considered an appropriate location due to availability of sufficient floor space, existing overhead crane, available utilities, and proximity to proposed operations. If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

Cleaned piping and components would be disposed of in a Hanford Site solid waste management facility.

REMOVE LARGE COMPONENTS FOR CLEANING
The large diameter cleaning vessel (LDCV) located in the existing MASF could be used for cleaning large components following removal (e.g., primary sodium pumps, intermediate heat exchanger (IHX) tube bundles, and instrument trees). The LDCV could be retrofitted with a new super heated steam supply and associated control system for use in cleaning the aforementioned components. The IHX tube bundles, which contain multiple parallel sodium flow paths, may be dismantled to ensure effective cleaning. Small bore pipe and components also could be cleaned in MASF, if necessary.

OTHER DEACTIVATION ACTIVITIES
Other related routine, continued deactivation activities that could occur as part of the proposed action are: remove/dispose of asbestos; remove/stabilize existing hazards in conjunction with systems and equipment deactivation associated with sodium residuals; remove/recycle/dispose excess deactivated equipment and components; and remove depleted uranium and/or lead shielding.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.70E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.80E-14	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Alpha release rate based on Pu-239

B/G - 0	2.50E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)	

Beta/Gamma release rate based on Cs-137

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ba - 137 m	Co - 60	Cs - 134	Cs - 137	H - 3
Mn - 54	Na - 22	Pu - 239	Ru - 106	Zn - 65

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) OPERATION REQUIREMENTS- Radiological Work Permits/ Work Packages
Operations shall be performed in accordance with the controls specified in radiation work planning documents and/or operating procedures and shall be available for inspection upon request. (WAC 246-247-060(5) and WAC 246-247-080(10))

5) OPERATION REQUIREMENTS- Radiological Control Personnel Support
All activities shall be conducted under the auspices of radiological or health physics control technicians or personnel. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used, as necessary to contain contamination. (WAC 246-247-060(5))

6) OPERATION LIMITATIONS- Sodium
The total amount of sodium reacted from all emission units shall not exceed 4,000 gallons per year with no more than 2,000 gallons challenging a single emission unit. (WAC 246-247-060(5)) and (WAC 246-247-040(5))

7) WDOH NOTIFICATION- Change in PTE Calculations
The department will be notified if radionuclides other than Ba-137m, Co-60, Cs-134, Cs-137, H-3, Mn-54, Na-22, Pu-239, Ru-106, and Zn-65 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI. (WAC 246-247-040(5) and WAC 246-247-110(8))

8) CONTAMINATION CONTROL- Leaks and Spills
Appropriate spill prevention procedures shall be in place to minimize the release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills. (WAC 246-247-060(5))

Emission Unit ID: 1181

200W

Categorical Drum Venting System 2 (Active)

This is a MINOR, ACTIVELY ventilated emission unit.

TRU Waste Retrieval

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA		Up to 3 per Drum Venting System, aerosol tested annually.
	Glove Bag		Up to 3 per Drum Venting System.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		TOTAL ALPHA TOTAL BETA TOTAL GAMMA	End of each shift of operation.

Sampling Requirements Smears of the exhaust vent at the end of each shift of operation.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for the TRU retrieval project support decontamination and decommissioning operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Categorical Drum Venting System 2 (Active) Operation (Replaces NOC 804)	AIR 16-1223	12/19/2016	1038

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.90E-06 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Transuranic waste retrieval involves the processes for removing and dispositioning buried suspect transuranic mixed low-level radioactive waste (hereafter called TRU waste) from Hanford Site burial trenches for storage or disposal at other approved locations. Dispositioning is the orderly administration and handling of waste (including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys.

See the following for a detailed description of specific controls/conditions for each EU associated with the Transuranic Waste Retrieval Project:

EU 455 Hanford Sitewide W-PORTEX-007
EU 1440 200 Area Diffuse/ Fugitive; Operation of the Transuranic Waste Retrieval Project
EU 755 Mobile Drum Venting System (Active Ventilation) (MDVS)

EU 756 Mobile Drum Venting System (Passive Ventilation) (MDVS)
EU 1181 Categorical Drum Venting System 2 (DVS2)
EU 1322 Portable Enclosure System #1 (PES)
EU 1326 Vapor Extraction System (VES)
EU 1327 Next Generation Retrieval (NGR)

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 7.70E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.30E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.
See condition; Alternate Release Rate Approval, Release Rates: Installation of Drum Vents.

B/G - 0	1.90E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.
See condition; Alternate Release Rate Approval, Release Rates: Installation of Drum Vents..

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) ABATEMENT TECHNOLOGY - Drum Venting System 2
The DVS2 will be exhausted with a HEPA vacuum to contain potential contamination. Glove bags will have ports to check for contamination or hazardous gases after venting. DVS2 stations will be installed within an enclosure such as a Conex box or trailer, to form a DVS2 unit. The DVS2 unit will have side doors that will open to accommodate loading and unloading the drums. The HEPA vacuum flow is controlled with a ball valve to less than 10 cfm or 4.7E-03 cubic meters/s. (WAC 246-247-040(5) and WAC 246-247-060(5))

5) CONTROL TECHNOLOGY - HVU
HVUs shall be tested at 99.95% removal efficiency and shall be aerosol tested annually using ANSI N-510 as guidance for non-ANSI N-509 systems. Records of this testing shall be maintained on file. (WAC 246-247-040(5) and WAC 246-247-060(5))

6) ALTERNATIVE RELEASE RATE APPROVAL, RELEASE RATES - Installation of Drum Vents
These alternative release fractions are approved for this emission unit.

A maximum of 9,000 containers of waste will be processed per year using the MDVS and/or DVS2s venting systems. The processing rate is designed to reflect potential emissions during an average handling time of 60 minutes per container. One drum is processed at a time per DVS or DVS2. Using a release fraction of 1.0 E-03 for particulates and a time factor of 1.03 (60 minutes per container multiplied by 9,000 containers and divided by 526,000 minutes per year).

The predicted release rate from the MDVS (active vent) without any emissions control equipment is 2.1 E-02 Ci/year and the predicted release rate with emissions control equipment is 1.0 E-05 Ci/year. The predicted release rates for the representative radionuclides Am-241+Progeny and Cs-137+Progeny are as follows:

Unabated PTE; Am-241+Progeny 1.3E-03 Ci/yr. : Cs-137+Progeny 1.9E-02 Ci/yr.

Abated PTE Am-241+Progeny 6.4E-07 Ci/y : Cs-137+Progeny 9.6E-06 Ci/yr.

The predicted release rate (unabated) for using the MDVS (passive vent) without any emissions control equipment is 2.2E-05 Ci/yr. and the predicted release rate (abated) with emissions control equipment is 2.2E-05 Ci/yr. The predicted release rates for the representative radionuclides Am 241+Progeny and Cs-137+Progeny are as follows:

Unabated PTE; Am-241+Progeny 4.3E-07 Ci/yr. : Cs-137+Progeny 2.2E-05 Ci/yr.
Abated PTE Am-241+Progeny 4.3E-07 Ci/y : Cs-137+Progeny 2.2E-05 Ci/yr.

The passive vent of the MDVS exhausts potential emissions from the use of the HEPA Vacuum mounted in the test chamber to collect metal filings after installation of a Nucfil® or equivalent filter. Release rates are calculated by multiplying surface area vacuumed by the contamination level. An estimate of the release rate is calculated by assuming the surface area of the boot that covers the drum lid during the filter installation process (8.3 square inches) multiplied by 9,000 drums with an average contamination level of 10,000 dpm/100 cm^2 beta/gamma and 200 dpm/100 cm^2 alpha. Using a release fraction of 1.0 for the HEPA vacuum use, the potential release rates from using the DVS is 4.3E-7 Ci/yr. americium-241 and 2.2E-05 Ci/yr. cesium-137. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

7) PROCESS DESCRIPTION - Venting of Containers
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The work will be performed to meet ALARA practices and will be conducted according to applicable operating procedures, radiological control procedures, and radiological work permit (RWPs).

Vent filters will continue to be installed in designated containers via one of the drum venting systems described in this license. These systems will ensure personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid or puncturing the lid with a filter dart (using Dart System). Container venting systems are described in the license conditions. Designated drums slated for venting will be vented with the Mobile Drum Venting System (MDVS) , Drum Venting System 2 (DVS2) , or other venting methods. (WAC 246-247-040(5) and WAC 246-247-060(5))

8) PROCESS DESCRIPTION - Drum Venting System 2
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

A vent system utilizing a pneumatic drill, DVS2, is remotely actuated to vent the drum. After the drum is vented, a filter is hand installed, the head space of the drum is sampled and the drum is staged in a designated area.

Glove bags will be used to contain potential contamination. A portable HEPA vacuum with variable speed is connected to the HEPA filtered port on the glove bag and will be used for exhausting the glove bag. The vacuum will be operated during venting and for a short time following venting at a low flow. Glove bags will also have ports to take smears to check for contamination or to sample for hazardous gases. As many as three DVS2 venting units, each with up to three venting stations, will be installed in a weather structure enclosure such as a conex box. Plans include having up to three of the DVS2 units in the burial grounds, for a total of nine DVS2 venting stations. (WAC 246-247-040(5) and WAC 246-247-060(5))

9) CONTAMINATION CONTROL - Removable Contamination
Fixatives or other controls will be employed if removable contamination levels (other than spot contamination) exceed 100,000 dpm/100 cm^2 beta/gamma or exceed 2,000 dpm/100 cm^2 alpha. (WAC 246-247-040(5) and WAC 246-247-060(5))

10) WDOH NOTIFICATION - Drum Vent Failure
The department shall be notified via email or the established procedures in the Environmental Notification program within 24 hours of all drum vents that fail to be installed properly and smears show >2,000 dpm/100 cm^2 alpha or

>100,000 dpm/100 cm^2 beta/gamma removable contamination (an example of a "failure" is a pressure release that blows past the seat of the boot or a deflagration). (WAC 246-247-040(5) and WAC 246-247-060(5))

11) WDOH NOTIFICATION - Loss of containment
WDOH will be notified per WAC 246-247-080(5) via email or the established procedures in the Environmental Notification program if a loss of containment occurs (dropping, spilling, puncturing a container, or otherwise encountering loss of integrity where contamination escapes containment), which exceeds 100,000 dpm/100 cm^2 beta/gamma or 2,000 dpm/100 cm^2 alpha removable contamination. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 1183

200W 200W S-MO444-001

HSGS Analysis Facility

This is a MINOR, ACTIVELY ventilated emission unit.

Waste Receiving and Processing Facility (WRAP)

Emission Unit Information

Stack Height: 10.00 ft. 3.05 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: 4.00 ft/second. 1.22 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)	Emissions will be calculated per conditions below.	Total Alpha (assumed Am-241) and Total Beta (assumed Sr-90)	

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the WRAP Head Space Gas Sampling (HSGS) Analysis Facility involve laboratory scale analysis operations supporting the Hanford transuranic (TRU) program mission.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Head Space Gas Sampling at the Waste Receiving and Processing Facility (Replaces NOC 810)	AIR 17-207	2/15/2017	1076

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.26E-09 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) PROCESS DESCRIPTION

This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 2404-WC building has been transferred into the WRAP complex from the Central Waste Complex (CWC) and includes equipment within the 2404-WC building for HSGS of solid waste storage containers. HSGS is also performed in the 2336-W Process Area. This activity normally occurs within the 2404-WC after nondestructive examination (NDE) and nondestructive assay (NDA) in 2336-W

Analysis of Headspace Gas Samples

Analyses of head space gas samples are to be performed on samples obtained from TRU solid waste storage containers in various field locations. HSGS is performed per Radioactive Air Emissions Notice of Construction Application for the Transuranic Waste Retrieval Project (DOE/RL 2001 57). The HSGS protocol employs a syringe sampling system to collect up to a 100 ml sample from the container headspace through a filter into a gastight syringe for analysis. To sample the container head space gas, a side-port needle

is pressed through the sample port septum and into the head space beneath the lid. This permits the gas to be drawn under a vacuum directly into the syringe.

Samples are withdrawn into a syringe through a 0.5 micron filter (99.95% efficient, Pall Corporation* or equivalent). The syringe is transported to a field laboratory where the sample is inserted into the gas chromatograph mass spectrometer (GCMS) equipment.
The emissions will be vented from the GCMS and exhausted to the atmosphere through a ceiling fan. The process involves injecting the HSGS sample into the GCMS for analysis. The analysis involves heating the gas to greater than 200°C and then emitting the analyzed gas at a rate of approximately 30 ml/min. Up to 150 of these samples are planned to be analyzed per week. Emission calculations indicate that this process will result in a maximum (PTE) of approximately 8.0E-10 mrem/yr total effective dose equivalent (TEDE) to the onsite receptor.

Headspace Gas Sampling

Containers subjected to HSGS at WRAP are already vented with NucFil® filters or other vent mechanisms. In some cases, a container might have had a vent clip. An approved particulate filter or filter with equivalent volatile organic compound (VOC) dispersion characteristics is installed in the container, to allow characterization sampling. Withdrawing a sample for HSGS, from containers with existing vents does not create a new pathway for potential radioactive air emissions. The HSGS sampling protocol employs either the use of a syringe or a canister-sampling system to collect headspace-gas samples for analysis and quality control.

The sampling system for collecting headspace gas, consists of a side port needle (e.g., a hollow needle sealed at the tip with a small opening on its side close to the tip) a filter to prevent particles from contaminating the gas sample, and an adapter to connect the side port needle to the filter or sampling port. To sample the headspace gas, a side port needle is pressed through the sample port or filter and into the headspace beneath the lid. The gas is drawn under a vacuum directly into the sampling system.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.26E-09 mrem/year. Approved are the associated potential release rates (Curies/year) of:

DE - 0	7.49E-10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

DE-Ci is a method of normalizing the exposure risk of the Various isotopes, where the DE-Ci are represented as PU-239.

Emission Unit ID: 1185

300

361 Building

This is a MINOR, FUGITIVE, non-point source emission unit.

300 Diffuse/Fugitive Emissions

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
None	None		

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	Determined using 40 CFR 61 Appendix D calculations in lieu of monitoring	As listed in condition 3 of this emission unit.	Inventory

Sampling Requirements The radioactive material inventory will be tracked through out the year to ensure that the yearly emission limit is not exceeded.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The 361 Building provides a space to house monitoring instrumentation.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the 361 Building in Testing Equipment Operability Utilizing Radioxenon and Radon (replaced NOC 862)	AIR 14-509	5/20/2014	921

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 9.00E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The 361 Building is pre-cast concrete portable equipment shelter that is permanently located in the southwest corner of the 300 Area on the Hanford Site. Sampling equipment (i.e., Swedish Automatic Unit for Noble gas and Acquisition and analysis [SAUNA] samples atmospheric gases, some of which may be radioactive. Periodically radioactive gases/materials will be used to confirm operability of the instrument. The SAUNA is a collection and analysis system. Gases/materials are consumed by the system, analyzed, transferred to an archive storage bottle, and then finally released by evacuating the archive bottle in to the room air space. Other radioactive gases/materials may also be utilized by the project.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 9.00E-04 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Beta - 0	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ac - 225	Ac - 227	Ac - 228	Ag - 108 m	Ag - 108
Ag - 109 m	Ag - 110 m	Ag - 110	Ag - 111	Al - 26
Al - 28	Am - 241	Am - 242 m	Am - 242	Am - 243

Am - 245	Am - 246	Ar - 37	Ar - 39	Ar - 41
Ar - 42	As - 74	As - 76	As - 77	At - 217
Au - 195	Au - 198	Au - 198 m	Ba - 131	Ba - 133
Ba - 133 m	Ba - 137 m	Ba - 139	Ba - 140	Ba - 141
Ba - 142	Ba - 143	Be - 10	Be - 7	Bi - 207
Bi - 208	Bi - 210 m	Bi - 210	Bi - 211	Bi - 212
Bi - 213	Bi - 214	Bk - 247	Bk - 249	Bk - 250
Br - 82	Br - 82 m	Br - 83	Br - 84	Br - 84 m
Br - 85	C - 11	C - 14	C - 15	Ca - 41
Ca - 45	Ca - 47	Cd - 107	Cd - 109	Cd - 111 m
Cd - 113 m	Cd - 113	Cd - 115 m	Cd - 115	Cd - 117
Cd - 117 m	Ce - 139	Ce - 141	Ce - 142	Ce - 143
Ce - 144	Cf - 249	Cf - 250	Cf - 251	Cf - 252
Cl - 36	Cm - 241	Cm - 242	Cm - 243	Cm - 244
Cm - 245	Cm - 246	Cm - 247	Cm - 248	Cm - 250
Co - 56	Co - 57	Co - 58	Co - 60	Co - 60 m
Cr - 49	Cr - 51	Cr - 55	Cs - 131	Cs - 132
Cs - 134	Cs - 134 m	Cs - 135	Cs - 136	Cs - 137
Cs - 138	Cs - 139	Cs - 140	Cs - 141	Cu - 64
Cu - 66	Dy - 159	Dy - 165	Dy - 169	Er - 169
Er - 171	Es - 254	Eu - 150	Eu - 152	Eu - 152 m
Eu - 154	Eu - 155	Eu - 156	Eu - 157	F - 18
Fe - 55	Fe - 59	Fr - 221	Fr - 223	Ga - 67
Ga - 68	Ga - 70	Ga - 72	Gd - 148	Gd - 149
Gd - 151	Gd - 152	Gd - 153	Ge - 68	Ge - 71
Ge - 71 m	Ge - 75	Ge - 77	Ge - 77 m	H - 3
Hf - 175	Hf - 178 m	Hf - 179 m	Hf - 181	Hf - 182
Hg - 203	Ho - 163	Ho - 166	Ho - 166 m	I - 122
I - 123	I - 125	I - 126	I - 128	I - 129
I - 130	I - 130 m	I - 131	I - 132	I - 132 m
I - 133	I - 133 m	I - 134	I - 134 m	I - 135
In - 106	In - 111	In - 113 m	In - 114 m	In - 114
In - 115	In - 115 m	In - 116	In - 116 m	In - 117
In - 117 m	Ir - 192	K - 40	K - 42	Kr - 81
Kr - 81 m	Kr - 83 m	Kr - 85	Kr - 85 m	Kr - 87
Kr - 88	Kr - 89	Kr - 90	La - 137	La - 138
La - 140	La - 141	La - 142	La - 144	Lu - 177
Lu - 177 m	Mg - 27	Mg - 28	Mn - 52	Mn - 54
Mn - 56	Mo - 103	Mo - 104	Mo - 105	Mo - 93
Mo - 99	N - 13	Na - 22	Na - 24	Na - 24 m
Nb - 100	Nb - 101	Nb - 103	Nb - 91	Nb - 91 m

Nb - 92	Nb - 93 m	Nb - 94	Nb - 95	Nb - 95 m
Nb - 97	Nb - 97 m	Nb - 98	Nd - 144	Nd - 147
Ni - 56	Ni - 59	Ni - 63	Ni - 65	Np - 235
Np - 236	Np - 237	Np - 238	Np - 239	Np - 240
Np - 240 m	O - 15	O - 19	Os - 191	P - 32
P - 33	Pa - 231	Pa - 233	Pa - 234	Pa - 234 m
Pb - 209	Pb - 210	Pb - 211	Pb - 212	Pb - 214
Pd - 103	Pd - 107	Pd - 109	Pm - 143	Pm - 144
Pm - 145	Pm - 146	Pm - 147	Pm - 148 m	Pm - 148
Pm - 149	Pm - 151	Po - 208	Po - 209	Po - 210
Po - 211	Po - 212	Po - 213	Po - 214	Po - 215
Po - 216	Po - 218	Pr - 143	Pr - 144	Pr - 144 m
Pu - 234	Pu - 236	Pu - 237	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242	Pu - 243	Pu - 244
Pu - 246	Ra - 223	Ra - 224	Ra - 225	Ra - 226
Ra - 228	Rb - 81	Rb - 83	Rb - 84	Rb - 86
Rb - 87	Rb - 88	Rb - 89	Rb - 90	Rb - 90 m
Re - 186	Re - 187	Re - 188	Rh - 101	Rh - 102
Rh - 102 m	Rh - 103 m	Rh - 104	Rh - 105	Rh - 105 m
Rh - 106	Rn - 219	Rn - 220	Rn - 222	Rn - 224
Ru - 103	Ru - 105	Ru - 106	Ru - 97	S - 35
Sb - 122	Sb - 124	Sb - 125	Sb - 126	Sb - 126 m
Sb - 127	Sb - 129	Sc - 44	Sc - 46	Sc - 47
Se - 75	Se - 79	Se - 79 m	Si - 31	Si - 32
Sm - 145	Sm - 146	Sm - 147	Sm - 148	Sm - 151
Sm - 153	Sm - 157	Sn - 113	Sn - 117 m	Sn - 119 m
Sn - 121 m	Sn - 121	Sn - 123	Sn - 125	Sn - 126
Sr - 85	Sr - 87 m	Sr - 89	Sr - 90	Sr - 91
Sr - 92	Ta - 179	Ta - 180	Ta - 182	Ta - 182 m
Ta - 183	Tb - 157	Tb - 158	Tb - 160	Tb - 161
Tc - 101	Tc - 103	Tc - 106	Tc - 95 m	Tc - 95
Tc - 97	Tc - 97 m	Tc - 98	Tc - 99	Tc - 99 m
Te - 121 m	Te - 121	Te - 123	Te - 123 m	Te - 125 m
Te - 127 m	Te - 127	Te - 129 m	Te - 129	Te - 131
Te - 131 m	Te - 132	Te - 133	Te - 133 m	Te - 134
Th - 227	Th - 228	Th - 229	Th - 230	Th - 231
Th - 232	Th - 233	Th - 234	Ti - 44	Ti - 45
Ti - 51	Tl - 201	Tl - 204	Tl - 206	Tl - 207
Tl - 208	Tl - 209	Tm - 168	Tm - 170	Tm - 171
U - 232	U - 233	U - 234	U - 235	U - 236
U - 237	U - 238	U - 239	U - 240	V - 48

V - 49	W - 181	W - 185	W - 187	W - 188
Xe - 122	Xe - 123	Xe - 125	Xe - 127	Xe - 127 m
Xe - 129 m	Xe - 131 m	Xe - 133	Xe - 133 m	Xe - 135
Xe - 135 m	Xe - 137	Xe - 138	Xe - 139	Y - 88
Y - 90	Y - 90 m	Y - 91	Y - 91 m	Y - 92
Y - 93	Yb - 164	Yb - 169	Yb - 175	Yb - 177
Zn - 65	Zn - 69	Zn - 69 m	Zr - 100	Zr - 88
Zr - 89	Zr - 93	Zr - 95	Zr - 97	Zr - 98
Zr - 99				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Monitoring - The gross alpha and gross beta release rates will be confirmed via 40 CFR 61, Appendix D calculations in lieu of monitoring. WAC 246-247-040(5), -060(5)

5) RADIONUCLIDES - Activities at the 361 Building will be assessed to ensure that no radionculides are handled that are not listed in this license. If any activity at the 361 Building results in a new radionuclide being handled at the building, a written notification will be made to the Washington State Department of Health (email is acceptable). [WAC 246-247-060(5)

Emission Unit ID: 1207

200W P-241SX107-001

241-SX-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 4.21 ft. 1.28 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SX-107 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1169

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 1208

200W P-241SX108-001

241-SX-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 4.79 ft. 1.46 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SX-108 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1170

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 1209

200W P-241SX109-001

241-SX-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 4.75 ft. 1.45 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SX-109 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1171

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 1210

200W P-241SX110-001

241-SX-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 4.38 ft. 1.34 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SX-110 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1172

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 1211

200W P-241SX111-001

241-SX-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 4.54 ft. 1.38 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SX-111 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1173

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 1212

200W P-241SX112-001

241-SX-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 4.54 ft. 1.38 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SX-112 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1174

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 1213

200W P-241SX114-001

241-SX-114

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.25 ft. 1.60 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SX-114 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1176

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 1219

200W P-241SX101-001

241-SX-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.83 ft. 1.78 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SX-101 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1163

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 1220

200W P-241SX102-001

241-SX-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 3.33 ft. 1.01 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SX-102 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1164

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 1221

200W P-241SX103-001

241-SX-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 3.67 ft. 1.12 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SX-103 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1165

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 1222

200W P-241SX104-001

241-SX-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 3.71 ft. 1.13 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SX-104 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1166

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 1223

200W P-241SX105-001

241-SX-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 4.04 ft. 1.23 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SX-105 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1167

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 1224

200W P-241SX106-001

241-SX-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 3.75 ft. 1.14 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SX-106 SST Radial Breather Filter Operation	AIR 17-710	7/27/2017	1168

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244

Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Conditions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single-shell tank due to structural concerns. The justification for structural concerns with the single-shell tank shall be documented and provided to WDOH upon request.

5) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

6) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 1227

200W P-241S304-001

241-S-304

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 3.83 ft. 1.17 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-S-304 Catch Tank Radial Breather Filter Operation	AIR 17-710	7/27/2017	1242

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 241-S-304 catch tank receives waste from the S-151 diversion box.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 1228

600 P-6241V-001

6241-V Vent Station Cross Site

This is a MINOR, PASSIVELY ventilated emission unit.

Cross Site Vent Station 6241

Emission Unit Information

Stack Height: 1.42 ft. 0.43 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 8.30 ft/second. 2.53 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Cross Site vent station to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
6241-V Vent Station Cross Site G-1 Breather Filter Operation	AIR 17-710	7/27/2017	1235

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 6241-V breather filter allows the cross site vent station to vent to the atmosphere.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) ABATEMENT TECHNOLOGY-G-1 HEPA Annual Leak Testing
The G-1 HEPA filters are in-place leak tested annually and will have a minimum leak test efficiency of 99 95%. G-1 filters will be replaced when aerosol testing performance criteria are not met.

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 1229

200E P-241A417-001

241-A-417

This is a MINOR, PASSIVELY ventilated emission unit.

241-A TANK FARM

Emission Unit Information

Stack Height: 3.83 ft. 1.17 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-A-417 Catch Tank Radial Breather Filter Operation	AIR 17-710	7/27/2017	1237

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The 241-A-417 catch tank receives waste from A and AX tank farms.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 1230

600 P-6241A-001

6241-A Diversion Box

This is a MINOR, PASSIVELY ventilated emission unit.

Diversion Box

Emission Unit Information

Stack Height: 1.50 ft. 0.46 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 8.30 ft/second. 2.53 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a diversion box to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
6241-A Diversion Box G-1 Breather Filter Operation	AIR 17-710	7/27/2017	1234

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
6241-A Diversion Box breather filter allows the 6241-A diversion box to vent to the atmosphere.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) ABATEMENT TECHNOLOGY-G-1 HEPA Annual Leak Testing
The G-1 HEPA filters are in-place leak tested annually and will have a minimum leak test efficiency of 99 95%. G-1 filters will be replaced when aerosol testing performance criteria are not met.

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 1231

200 P-241EW151-001

241-EW-151

This is a MINOR, PASSIVELY ventilated emission unit.

241-EW

Emission Unit Information

Stack Height: 1.88 ft. 0.57 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a catch tank to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-EW-151 Catch Tank Radial Breather Filter Operation	AIR 17-710	7/27/2017	1241

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
241-EW-151 is the cross-site transfer line vent station catch tank.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242		

	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

10) ABATEMENT TECHNOLOGY-Breather Filter Seal Loop Inspection
For breather filters equipped with seal loop, seal loop fluid level will be checked quarterly.

Emission Unit ID: 1232

200W P-241S302-001

240-S-302

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 3.83 ft. 1.17 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

The previous nomenclature for this tank was 241-S-302

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
240-S-302 Catch Tank Radial Breather Filter Operation (Previous NOC 894)	AIR 17-710	7/27/2017	1236

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.

The 240-S-302 catch tank is a 17,670 gallon capacity catch tank designed to receive leakage, spills, line flushes and drainage associated with waste transfers through Diversion Box 240-S-151. A request for nomenclature change was submitted from ORP/WRPS 12-ECD-0060 on November 26, 2012, and received as IM 7471. The previous nomenclature was 241-S-302.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

Emission Unit ID: 1243

200 200 W-TRUDECON-001

Decon Trailer TRU Waste Retrieval (Intermit. Op.)

This is a MINOR, PASSIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[2]	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Sampling Requirements Per the sitewide ambient monitoring program

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Decontamination Trailer at the Transuranic Waste Retrieval Project (Replaces NOC 851)	AIR 16-903	9/12/2016	1018

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.55E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

All work will be performed in accordance with approved radiological control methods and as low as reasonably achievable (ALARA) program requirements. These requirements will be carried out through radiological control procedures.

The general physical processes associated with decontamination activities in the decontamination trailer will consist of the following:

- On identification of the need for additional decontamination of personnel, affected individuals will be escorted to the decontamination trailer.

- As appropriate, contaminated clothing, coverings, and/or articles will be removed, packaged, and dispositioned in accordance with applicable facility waste handling procedures.

- Personnel decontamination processes might include various methods or a combination of cleaning agents (e.g., soap and water, pre-moistened towelettes, shaving cream-type

foam decontamination agents for facial areas; removal of hair; and abrasive soaps for toughened skin surfaces [e.g., hands and feet]).

- Spent decontamination solutions will be transferred from the holding tanks directly to a mobile disposal unit or containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

Periodic maintenance inspections of the decontamination trailer will be performed without use of containment or portable exhausters.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.55E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	8.37E-04	Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Any radionuclide might be present Am-241 is representative of the alpha-emitting radionuclides present.			
Cs - 137	4.19E-03	Solid	WAC 246-247-030(21)(a)
Beta/Gamma release rate based on Cs-137. CS-137 is representative of the Beta/gamma-emitting radionuclides present.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241 Cs - 137

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) PERIODIC CONFIRMATORY MEASUREMENTS

Periodic Confirmatory Measurements (PCM) for the passively vented emissions shall be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

Emission Unit ID: 1244

200 W-TRUDECON-002

Decon Trailer TRU (Collection Tank Vents)

This is a MINOR, PASSIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Decontamination Trailer at the Transuranic Waste Retrieval Project (Replaces NOC 851)	AIR 16-906	9/12/2016	1019

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.55E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

All work will be performed in accordance with approved radiological control methods and as low as reasonably achievable (ALARA) program requirements. These requirements will be carried out through radiological control procedures.

The general physical processes associated with decontamination activities in the decontamination trailer will consist of the following:

-On identification of the need for additional decontamination of personnel, affected individuals will be escorted to the decontamination trailer.

- As appropriate, contaminated clothing, coverings, and/or articles will be removed, packaged, and dispositioned in accordance with applicable facility waste handling procedures.

-Personnel decontamination processes might include various methods or a combination of cleaning agents (e.g., soap and water, pre-moistened towelettes, shaving cream-type foam decontamination agents for facial areas; removal of hair; and abrasive soaps for toughened skin surfaces [e.g., hands and feet]).

- Spent decontamination solutions will be transferred from the holding tanks directly to a mobile disposal unit or containerized (e.g., packaged in absorbents in drums or placed

in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

-Periodic maintenance inspections of the decontamination trailer will be performed without use of containment or portable exhausters.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.55E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	8.37E-04	Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Any radionuclide might be present Am-241 is representative of the alpha-emitting radionuclides present.			
Cs - 137	4.19E-03	Solid	WAC 246-247-030(21)(a)
Beta/Gamma release rate based on Cs-137. CS-137 is representative of the Beta/gamma-emitting radionuclides present..			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241 Cs - 137

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) PERIODIC CONFIRMATORY MEASUREMENTS
Periodic Confirmatory Measurements (PCM) for the vented and diffuse and fugitive emissions shall be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) EMISSIONS - Fugitive and Diffuse Emissions
Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

Emission Unit ID: 1250

600 J-Hammer-001

HAMMER

This is a MINOR, FUGITIVE, non-point source emission unit.

HAMMER

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(4)	In accordance with the Radiation Protection Plan and Radiological Control Manual .	TOTAL BETA/GAMMA	During each use of material

Sampling Requirements After each use - with radiological surveys/smears .

Additional Requirements

Radioactive material surevy and inventory records will be maintained for the activity to demonstrate that total Tc-99m usage each calendar year stays below the projected annual possession quantity.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Training using Tc-99m (Technetium-99 metastable) within the Hazardous Materials Management and Emergency Response (HAMMER) training complex, but will typically occur at either 1) a tank farm simulator facility on the western side of the complex; 2) a tactical maze building in the northeast corner of the complex; 3) a simulated hazardous waste facility in the north central part of the complex; or 4) a training tower near the center of the complex.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Use of Radioactive Materials at the Volpentest HAMMER/Hanford Training and Education Center	AIR 09-903	9/15/2009	749

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 8.30E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   The activities that will utilize the radioactive material Tc-99m will simulate what may be encountered in the event of a radiological dispersal type incident. A syringe or other low pressure spray device will be used to disperse droplets of Tc-99m solution into/onto various chosen surfaces, including but not limited to, lab ware, tabletops, and/or mock improvised explosive components. After the Tc-99m is dispersed, the training area will be surveyed to ensure the contamination is limited to the desired surfaces. The proposed activities could take place at any suitable location within the HAMMER training complex, but will typically occur at either 1) a tank farm simulator facility on the western side of the complex; 2) a tactical maze building in the northeast corner of the complex; 3) a simulated hazardous waste facility in the north central part of the complex; or 4) a training tower near the center of the complex. The proposed activities will take place at least 90 meters from either of the designated dose receptor locations (Al Alm Building or Administration Building).

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 8.30E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Tc - 99 m	1.56E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)	

The radioactive isotopes identified for this emission unit are (no quantities specified):

Tc - 99 m

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) No aerial dispersion (means any dispersion directly up into the atmosphere or directly out over the ground with no selected target) of Tc-99m shall be permitted. WAC 246-247-040(5) and 060(5)

5) After the Tc-99m is dispersed, the training area shall be surveyed to ensure the contamination is limited to the desired surfaces. WAC 246-247-040(5) and 060(5)

6) Application of Tc-99m solutions shall be limited to a syringe or low pressure garden sprayer. WAC 246-247-040(5) and 060(5)

7) Any other building/site that HAMMER personnel want to apply Tc-99m shall get prior approval from the Department if those buildings are less than 90 meters from either the Al Alm building or HAMMER administrative building. WAC 246-247-040(5) and 060(5)

8) No Tc-99m shall be applied outdoors when sustained wind conditions reach or exceed 20 miles per hour. WAC 246-247-040(5) and 060(5)

9) A log of radioactive materials inventory shall be maintained for the proposed activities to demonstrate total Tc-99m usage for the calendar year. WAC 246-247-040(5) and 060(5)

10) After each training evolution, potentially contaminated materials and equipment shall be packaged and moved to a radioactive materials management area at HAMMER for a minimum of 10 half-lives (approximately 60 hours) to allow the Tc-99m contamination to decay to less than background levels.WAC 246-247-040(5) and 060(5)

11) The training area shall be surveyed to verify there is no remaining contamination before it is released to general public. WAC 246-247-040(5) and 060(5)

12) Radiation protection personnel and/or physical barriers shall be used to control access to the training areas being contaminated. WAC 246-247-040(5) and 060(5)

13) If contamination is found outside the controlled area, it shall be removed using sticky tape, wipes, or other simular appropriate decontamination methods. WAC 246-247-040(5) and 060(5)

Emission Unit ID: 1289

200

Decon Trailer 200 East (Int. Power Exhaust)

This is a MINOR, ACTIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
			No credit taken for Abatement

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-040(5) & WAC 246-247-060(5)	See license condition 5	Per environmental monitoring program	See license condition 4 and 5

Sampling Requirements Radiological field surveys and near field monitoring

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Intermittent Powered exhaust of the Decon Trailer at 200 East Tank Farm

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Decon Trailer 200 East (Int. Powered Exhaust) Operation (Replaces NOC 856)	AIR 16-109	1/25/2016	950

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

a.) Upon identification of the need of additional decontamination activities in the 200 area, individuals would be escorted to the nearest decontamination trailer.

b.) As appropriate, contaminated clothing, coverings, and/or articles will be removed and packaged for laboratory analysis and/or disposition, in accordance with As Low As Reasonably Achievable Control Technology (ALARACT) 4.1, “Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste" and 12.1, “Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles."

c.) Personnel decontamination processes might include various methods or a combination of cleaning agents and /or chemicals. For example: soap and water, pre-moistened towelettes, removal of hair, abrasive soaps for toughened skin surfaces (e.g., hands and feet), and chelating agents.

d.) Spent decontamination solutions will be transferred from the holding tanks and/or bladder and containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

e.) Periodic maintenance inspection of the decontamination trailers will be performed without the use of containment or portable exhausters.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Pu - 239	1.40E-01	Sr - 90	1.40E-01
Alpha rates are based on PU-239+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.		Beta/Gamma release rates are based on Sr-90+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.	

4) WDOH ALTERNATE APPROVAL - Periodic Confirmatory Measurements (PCM)
PCM for the vented and diffuse and fugitive emissions will be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) REPORTING - Ambient Air Monitoring
Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

6) RECORDS - Log, Emissions Calculations
A log shall be maintained for each emission unit. The log shall contain records of important operations parameters including the date, location, and duration of the release, measured or calculated radionuclide concentrations, the type of emissions (liquid, gaseous, solid), and type of emission control and monitoring equipment. The emissions may be calculated from either tank water samples or from the best estimate of radiological material from surveys performed during personnel decontamination operations. WAC 246-247-040(5) and WAC 246-247-060(5)

Emission Unit ID: 1290

200

Decon Trailer 200 West (int Powered exh)

This is a MINOR, ACTIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
			No credit taken for Abatement

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-040(5) & WAC 246-247-060(5)	See license condition 5	Per environmental monitoring program	See license condition 4 and 5

Sampling Requirements Radiological field surveys and near field monitoring

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Intermittant Powered exhaust of the 200 West Decontamination Trailer

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Decon Trailer 200 West (Int. Powered Exhaust) Operation (Replaces NOC 857)	AIR 16-110	1/25/2016	956

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

a.) Upon identification of the need of additional decontamination activities in the 200 area, individuals would be escorted to the nearest decontamination trailer.

b.) As appropriate, contaminated clothing, coverings, and/or articles will be removed and packaged for laboratory analysis and/or disposition, in accordance with As Low As Reasonably Achievable Control Technology (ALARACT) 4.1, “Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste" and 12.1, “Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles."

c.) Personnel decontamination processes might include various methods or a combination of cleaning agents and /or chemicals. For example: soap and water, pre-moistened towelettes, removal of hair, abrasive soaps for toughened skin surfaces (e.g., hands and feet), and chelating agents.

d.) Spent decontamination solutions will be transferred from the holding tanks and/or bladder and containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

e.) Periodic maintenance inspection of the decontamination trailers will be performed without the use of containment or portable exhausters.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Pu - 239	1.40E-01	Sr - 90	1.40E-01
Alpha rates are based on PU-239+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.		Beta/Gamma release rates are based on Sr-90+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.	

4) WDOH ALTERNATE APPROVAL - Periodic Confirmatory Measurements (PCM)
PCM for the vented and diffuse and fugitive emissions will be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) REPORTING - Ambient Air Monitoring
Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

6) RECORDS - Log, Emissions Calculations
A log shall be maintained for each emission unit. The log shall contain records of important operations parameters including the date, location, and duration of the release, measured or calculated radionuclide concentrations, the type of emissions (liquid, gaseous, solid), and type of emission control and monitoring equipment. The emissions may be calculated from either tank water samples or from the best estimate of radiological material from surveys performed during personnel decontamination operations. WAC 246-247-040(5) and WAC 246-247-060(5)

Emission Unit ID: 1291

200

Decon Trailer 200 E (Collection Tank Vent)

This is a MINOR, PASSIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
			No abatement

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-040(5) & WAC 246-247-060(5)	See license condition 5	Per environmentall monitoring program	See license condition 4 and 5

Sampling Requirements Radiological field surveys and near field monitoring

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Decon Trailer 200 East (Collection Tank Vent) Operation (Replaces NOC 856)	AIR 16-108	1/25/2016	944

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

a.) Upon identification of the need of additional decontamination activities in the 200 area, individuals would be escorted to the nearest decontamination trailer.

b.) As appropriate, contaminated clothing, coverings, and/or articles will be removed and packaged for laboratory analysis and/or disposition, in accordance with As Low As Reasonably Achievable Control Technology (ALARACT) 4.1, “Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste" and 12.1, “Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles."

c.) Personnel decontamination processes might include various methods or a combination of cleaning agents and /or chemicals. For example: soap and water, pre-moistened towelettes, removal of hair, abrasive soaps for toughened skin surfaces (e.g., hands and feet), and chelating agents.

d.) Spent decontamination solutions will be transferred from the holding tanks and/or bladder and containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

e.) Periodic maintenance inspection of the decontamination trailers will be performed without the use of containment or portable exhausters.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Pu - 239	1.40E-01	Sr - 90	1.40E-01
Alpha rates are based on PU-239+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.		Beta/Gamma release rates are based on Sr-90+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.	

4) WDOH ALTERNATE APPROVAL - Periodic Confirmatory Measurements (PCM)
PCM for the vented and diffuse and fugitive emissions will be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) REPORTING - Ambient Air Monitoring
Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

6) RECORDS - Log, Emissions Calculations
A log shall be maintained for each emission unit. The log shall contain records of important operations parameters including the date, location, and duration of the release, measured or calculated radionuclide concentrations, the type of emissions (liquid, gaseous, solid), and type of emission control and monitoring equipment. The emissions may be calculated from either tank water samples or from the best estimate of radiological material from surveys performed during personnel decontamination operations. WAC 246-247-040(5) and WAC 246-247-060(5)

Emission Unit ID: 1292

200

Decon Trailer 200 West (Collection Tank Vent)

This is a MINOR, PASSIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
			No abatement

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-040(5) & WAC 246-247-060(5)	See license condition 5	Per environmental monitoring program	See license condition 4 and 5

Sampling Requirements Radiological field surveys and near field monitoring

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Decon Trailer 200 West (Collection Tank Vent) Operation (Replaces NOC 857)	AIR 16-111	1/25/2016	983

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

a.) Upon identification of the need of additional decontamination activities in the 200 area, individuals would be escorted to the nearest decontamination trailer.

b.) As appropriate, contaminated clothing, coverings, and/or articles will be removed and packaged for laboratory analysis and/or disposition, in accordance with As Low As Reasonably Achievable Control Technology (ALARACT) 4.1, “Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste" and 12.1, “Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles."

c.) Personnel decontamination processes might include various methods or a combination of cleaning agents and /or chemicals. For example: soap and water, pre-moistened towelettes, removal of hair, abrasive soaps for toughened skin surfaces (e.g., hands and feet), and chelating agents.

d.) Spent decontamination solutions will be transferred from the holding tanks and/or bladder and containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

e.) Periodic maintenance inspection of the decontamination trailers will be performed without the use of containment or portable exhausters.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Pu - 239	1.40E-01	Sr - 90	1.40E-01
Alpha rates are based on PU-239+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.		Beta/Gamma release rates are based on Sr-90+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.	

4) WDOH ALTERNATE APPROVAL - Periodic Confirmatory Measurements (PCM)
PCM for the vented and diffuse and fugitive emissions will be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) REPORTING - Ambient Air Monitoring
Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

6) RECORDS - Log, Emissions Calculations
A log shall be maintained for each emission unit. The log shall contain records of important operations parameters including the date, location, and duration of the release, measured or calculated radionuclide concentrations, the type of emissions (liquid, gaseous, solid), and type of emission control and monitoring equipment. The emissions may be calculated from either tank water samples or from the best estimate of radiological material from surveys performed during personnel decontamination operations. WAC 246-247-040(5) and WAC 246-247-060(5)

Emission Unit ID: 1293

200 W-296P107-001

296-P-107

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 28.00 ft. 8.53 m. Stack Diameter 0.83 ft. 0.25 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 91.28 ft/second. 27.82 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times when exhauster is in use
	Heater	1	Operational at all times when exhauster is in use
	Prefilter	1	
	HEPA Filter Stages/Banks	2	In series, two filters per stage/bank
	Fan	1	3000 cfm

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, Am-241, Pu-239/240, Total Alpha, Total Beta	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit, also known as POR107, is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit is a portable exhauster that operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-P-107 Operation - Phase II Waste Retrieval and Closure (Replaces NOC 825)	AIR 15-809	7/29/2015	943

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from tanks at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped to a receiver tank, staging tank, storage double shell tank (DST), or other staging/storage vessel associated with the supplemental treatment, packaging, or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUICING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving DST, recirculated supernatant/water, chemical agent, or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities. The vacuum waste retrieval system is introduced into the tanks by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel, or a staging single shell tank (SST), storage DST, or other staging/storage vessels associated with supplemental treatment, packaging, or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the tanks. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B, and 241-T Tank Farms, a vacuum retrieval process tank, staging tank, staging SST, storage DST, or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the tank being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some tanks. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360

degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST, or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste. The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non leaker tanks, and 2) a vacuum retrieval option is intended for retrieval of assumed leaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 241 2.30E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Am - 243 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ba - 137 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	C - 14 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cd - 113 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Cm - 242 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 244 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Co - 60 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 134 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 137 2.10E+06 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE
Eu - 152 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 154 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
H - 3 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	I - 129 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Nb - 93 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ni - 59 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ni - 63 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Np - 237 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pa - 231 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 5.30E+03 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE
Pu - 240 1.20E+02 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Pu - 241 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ra - 226 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ra - 228 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ru - 106 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sb - 125 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Se - 79 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sm - 151 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sn - 126 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sr - 90 5.50E+06 Contributes GREATER than 0.1 mrem/yr to the MEI and represents greater than 10% of the unabated PTE	Tc - 99 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Th - 229 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Th - 232 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 232 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233	U - 234	U - 235
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
U - 236	U - 238	Y - 90
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Zr - 93		
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

4) RELEASE RATES-WDOH Log Approval
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms (WAC 246-247-080(7)).

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed (tank inventory and supernate) using the release fraction for the tank inventory of 1.0 E-3 for tank inventory and 8.0 E-5 for supernate (WAC 246-247-040(5) and WAC 246-247-060(5)).

6) WDOH ALTERNATE APPROVAL-Non Destructive Analysis Method
A pre-operational Non Destructive Analysis (NDA) of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the in-service date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Standards
General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations. (WAC 246-247-040(5) and WAC 246-247-060(5)).

8) WDOH NOTIFICATION-Leak Testing Cannot be Performed
If new or altered section of ductwork cannot be tested due to tie-ins, WDOH will be notified (WAC 246-247-040(5) and WAC 246-247-060(5)).

9) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137, Sr-90, Pu-239/240, and Am-241 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI when a unit is deployed or redeployed (WAC 246-247-040(5) and WAC 246-247-110(8)).

10) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels (WAC 246-247-040(5) and WAC 246-247-060(5)).

11) WDOH NOTIFICATION-Retrieval Under Passive Ventilation Contitions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single shell tank due to structural concerns. The justification for structural concerns with the single shell tank shall be documented and provided to WDOH upon request. (WAC 246-247-040(5) and WAC 246-247-060(5))

12) WDOH NOTIFICATIONS-High Reading on Weekly Smear Surveys
Monitoring of breather filters during retrieval activities shall consist of weekly smear surveys on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent. Levels above 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha shall be reported to WDOH. (WAC

246-247-040(5) and WAC 246-247-060(5))

13) STANDARDS-Startup Leak Testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

14) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field check requirements (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).

15) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on ASME N510 and ASME N511, and shall have a minimum efficiency of 99.95% (WAC 246-247-040(5), WAC 246-247-060(5), and WAC 246-247-075(2)).
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
•Relocating the ventilation system exhauster

16) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity cannot be directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained, based on psychometric charts and engineering calculations, so that the relative humidity remains below 70%. Daily Monitoring is not required over weekends and holidays when no waste disturbing activities are occurring (WAC 246-247-040(5) and WAC 246-247-060(5)).

17) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is also monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters (WAC 246-247-040(5)).

18) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing, shall be insulated (WAC 246-247-040(5) and WAC 246-247-060(5)).

19) ABATEMENT TECHNOLOGY- Ventilation System Exhauster Suspension from Active Service
The following will be implemented when a ventilation system exhauster that has been connected to a radioactive source is shut down and placed in suspension from active service. The following items will be completed 90 days after suspension from active service. Suspension from active service begins when the permit required preventative maintenance tasks are suspended or 365 days from the last day of operation, whichever is sooner.
•Isolate (e.g., valve or blank off) the ventilation system exhauster unit from the source of radioactivity.
•Isolate (e.g., valve or blank off) the source of radioactivity (e.g., tank) or establish an alternative flow path through a registered emission point (e.g., passive filter or powered exhauster).
•Isolate the flow path downstream of the last stage of HEPA filtration by capping the stack or alternative location if the stack has been removed.
•Provide written notification to WDOH documenting completion of the above.
During suspension from active service, the monitoring and associated recordkeeping are not required to be conducted. In addition, the abatement and monitoring system testing (e.g., aerosol testing of the HEPA filters), maintenance, calibration, field checks, and the associated recordkeeping are not required to be conducted (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

20) ABATEMENT TECHNOLOGY-Ventilation System Exhauster Return to Active Service
The ventilation system exhauster will be evaluated for its ability to meet the regulatory requirements to operate prior to placing the exhauster back in service:
•Verify that parts removed during suspension from active service have been replaced-in-kind and the unit has been returned to full function.
•Conduct abatement and monitoring system inspections and field checks.
•Verify that the abatement and monitoring system testing, maintenance, and calibration have been completed.
(Note: some testing, maintenance, and calibration can only be completed when the exhauster is running.) The CAM and sampling system are to be operated during aerosol testing.

WDOH will be notified at least seven calendar days prior to conducting operational testing of the ventilation system exhauster (WAC 246-247-040(5) and WAC 246-247-060(5)).

21) CONTAMINATION CONTROL-Max Operating Pressure
During waste retrieval operations, the maximum pressure for any waste retrieval method shall not exceed 37,000 psig (WAC 246-247-040(5) and WAC 246-247-060(5)).

22) CONTAMINATION CONTROL-Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading (WAC 246-247-040(5) and WAC 246-247-060(5)).

23) CONTAMINATION CONTROL-Exhauster Alternate Usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank (WAC 246-247-040(5) and WAC 246-247-060(5)).

24) CONTAMINATION CONTROL-Active ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 1294

200E P-242A-003

296-A-21A

This is a MINOR, ACTIVELY ventilated emission unit.

242-A Evaporator

Emission Unit Information

Stack Height: 50.00 ft. 15.24 m. Stack Diameter 3.00 ft. 0.91 m.

Average Stack Effluent Temperature: 80 degrees Fahrenheit. 27 degrees Celsius.

Average Stack ExhaustVelocity: 47.10 ft/second. 14.36 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
K-1 Exhaust System	Prefilter	3	3 parallel flow paths, 1 bank (3 x 3 array) per flow path, 2 in operation, 1 in standby
K-1 Exhaust System	HEPA Filter	3	3 parallel flow paths, 2 bank (3 x 3 array per bank) per flow path, 2 in operation, 1 in standby
K-1 Exhaust System	Fan	2	1 in operation, 1 in standby

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

The exhaust air from the stack is monitored by a record sampler through shrouded probe extraction nozzle on sample probe located in the stack. The filter paper is analyzed and the results of the analysis document emissions.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The 242-A Evaporator Building K-1 ventilation system is designed for air flow from areas of lesser contamination to areas of greater contamination. The contaminated K-1 zones are maintained at a negative pressure to control the spread of contamination. The K-1 ventilation system exhaust rooms in the Hot Zones: evaporator; pump; condenser; load out and hot equipment storage; and loading rooms; and the ion exchange enclosure.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of 242-A Evaporator Building K-1 Exhauster, 296-A-21A, (Replaced NOC 794)	AIR 14-911	9/26/2014	933

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-06 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 6.40E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The 242-A Evaporator Building Ventilation Systems are designed for air flow from uncontaminated to progressively more contaminated zones. The contaminated (hot) zones are maintained at a negative pressure, while the non-contaminated (cold) zones are maintained at a positive pressure. This is considered a secondary

confinement for liquids and airborne particulates released to the building. Maintaining the proper pressure in each zone will ensure that any leakage between the zones will always flow from a cold to a hot zone minimizing the spread of contamination.

The K-1Ventilation system exhausts the following rooms in the Hot Zone:
- Evaporator Room
- Pump Room
- Condenser Room
- Ion Exchange Enclosure
- Load-Out and Hot Equipment Storage Room
- Loading Room

Air is exhausted from the condenser, ion exchange, evaporator, and pump rooms through separate underground ducts into a common header to the three exhaust flter trains..

Exhaust air from this common header passes through the two exhaust trains having a pre-filter section and two stages of HEPA filters in series, with a third filter train being redundant as backup, before it is exhausted through stack 296-A-21A.

Air flow moves from areas of lesser contamination to areas of greater contamination, while maintaining a negative air pressure. This system has two fans, each with a 100 percent system flow capability, with one in operation and the other fan as back-up. Failure to maintain a specified flow will cause the shutdown of the primary fan and initiate the startup of the backup exhaust fan. The ventilation system will have an approximate flow rate of 18,000 cfm (max 19,500 cfm). Each filter train will have a 50 percent system flow rate, or approximately 9,000 cfm.

Negative pressure in the hot zones is maintained by the operation of the vortex damper mounted on the suction of electric exhaust fan. The backup fan has a similar vortex damper. Both dampers are adjusted automatically to maintain a preset negative pressure in the Evaporator room when their respective fan is operating.

The exhaust air from the stack will be monitored by a record sampler and a beta continuous air monitor (CAM). The stack radiation detector monitors the exhaust air discharged out of Stack 296-A-21A and initiates an automatic shutdown of both exhaust fans if beta radioactive emissions exceed the set point. A sample of the exhaust air is withdrawn from the stack through a shrouded probe and is sent to a record sampler where radioactive particulates are collected on a filter paper. The filter paper is analyzed and the results of the analysis document emissions from the 291-A-21A Stack.

Any other replacement, replacement-in-kind, or upgrades of parts and/or equipment not here specified, shall require review, and/or review and approval (WAC 246-247-030(16), WAC 246-247-030(19)).

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Alpha - 0 based on Am-241	4.20E-03	Am - 241	
Am - 243	Ba - 137 m		Beta - 0 based on Sr-90	1.80E-02
C - 14	Cd - 113 m		Cm - 242	
Cm - 243	Cm - 244		Co - 60	
Cs - 134	Cs - 137		Eu - 152	
Eu - 154	Eu - 155		H - 3	
I - 129	Nb - 93 m		Ni - 59	
Ni - 63	Np - 237		Pa - 231	

Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242	Ra - 226
Ra - 228	Ru - 106	Sb - 125
Se - 79	Sm - 151	Sn - 126
Sr - 90	Tc - 99	Th - 229
Th - 232	U - 232	U - 233
U - 234	U - 235	U - 236
U - 238	Y - 90	Zr - 93

4) The Technical Basis Document required by ANSI N13. 1-1999 (Clause 4) is required for review prior to startup operations of the stack.

5) Ensure the HEPA manufactures temperature, humidity, and air flow ratings are not exceeded (i.e, to ensure HEPA filter media is not ruptured nor performance compromised).

6) To verify the alternate potential-to-emit calculation method, annually provide the back-calculation using the measured emission rates and in situ measurements of the control equipment efficiencies (WAC 246-247-030(21)). A re-evaluation of the need for this requirement may be requested after 5 years of operation.

7) Periodic confirmatory monitoring (PCM) shall be required to verify low emissions monitoring during construction, deactivation, and operation activities. The PCM, as described in ALARACT 5, will be used to verify low emissions during manual soil excavation.

   If a regulated Filtered Vacuum Truck (FVT) is used, the PCM will be performed as required by either NOC_ID 774 "Operation of the Guzzler ™ in Tank Farm Facilities" or NOC _ID 658 "Use of the Guzzler™ (Filter Vacuum Truck) Vacuum Excavation System for Radiologically Limited Activities on the Hanford Site," or one of the latest WDOH approval of these two licenses. A FVT log will be used to track these emissions.

   Monitoring during equipment installation and deactivation activities will be in accordance with the following ALARACT Demonstrations and the WRPS Radiological Control Manual:
   - ALARACT 4 - Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste
   - ALARACT 15 - Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal Contaminated Ventilation Systems Components
   - ALARACT 16 - Tank Farm ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components
   - HNF-5183 - Tank Farms Radiological Control Manual.

8) A report of closure for 296-A-21 is required when this emission unit is permanently deactivated and isolated, so the department can perform a closure inspection prior to the system's disposal.

9) The facility shall notify the department of any unplanned shutdown of exhaust fans (e.g., triggered by a high exhaust stack beta radiation level).

Emission Unit ID: 1322

200 W-PES-001

Portable Enclosure System #1

This is a MAJOR, ACTIVELY ventilated emission unit.

Portable Enclosure System

Emission Unit Information

Stack Height: 26.00 ft. 7.92 m. Stack Diameter 1.67 ft. 0.51 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: 47.90 ft/second. 14.60 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	6	Three by two for total of six.
	1st Stage HEPA Filter	6	Aerosol tested annually to 99.95% removal of a particulate with a median diameter of 0.7 micron. Three by two housing for total of six HEPA filters.
	2nd Stage HEPA Filter	6	Aerosol tested annually to 99.95% removal of a particulate with a median diameter of 0.7 micron. Three by two housing for total of six HEPA filters

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Each radionuclide that could contribute greater than 10% of the potential TEDE.	Once per year minimum.

Sampling Requirements Destructive Examination (DE) of the filters. Daily sampling of the access doors when exhaust system is shut down with inventory inside.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Portable enclosure used to support waste retrieval.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Portable Enclosure System #1 Operation (Replaces NOC 804)	AIR 16-1222	12/19/2016	1037

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.00E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Transuranic waste retrieval involves the processes for removing and dispositioning buried suspect transuranic mixed low-level radioactive waste (hereafter called TRU waste) from Hanford Site burial trenches for storage or disposal at other approved locations. Dispositioning is the orderly administration and handling of waste

(including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys.

See the following for a detailed description of specific controls/conditions for each EU associated with the Transuranic Waste Retrieval Project:

EU 455	Handford Sitewide W-PORTEX 007
EU 1440	200 Area Diffuse/ Fugitive; Operation of the Transuranic Waste Retrieval Project
EU 755	Mobile Drum Venting System (Active Ventilation) (MDVS)
EU 756	Mobile Drum Venting System (Passive Ventilation) (MDVS)
EU 1181	Categorical Drum Venting System 2 (DVS2)
EU 1322	Portable Enclosure System #1 (PES)
EU 1326	Vapor Extraction System (VES)
EU 1327	Next Generation Retrieval (NGR)

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.90E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	8.30E+00	Liquid/Particulate Solid

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.

Cs - 137	1.60E+00	Liquid/Particulate Solid

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) WDOH NOTIFICATION - Implementing PES Containment
During high hazard work activities, removable surface contamination is maintained less than 2,000,000 dpm/100 cm^2 alpha and/or less than 4 rad/hr/100 cm^2 beta-gamma, limited to a 1 ft^2 area. For an allowed increase in contaminated area footprint of 4 ft^2 the limiting condition for removable contamination will be 500,000 dpm/100 cm^2 alpha and or 1rad/hr/100 cm^2 beta-gamma. Exceeding any of these contamination limits will require work to stop, and notification to Operation and RadCon management in accordance with the RWP. Notification to WDOH via email or the established procedures in the Environmental Notification program will be required. For work to continue above any of these limiting radiological conditions, the PES and commensurate controls will be implemented. The PES exhaust system will be utilized to minimize the potential for contamination spreads outside of posted radiological areas. (WAC 246-247-040(5) and WAC 246-247-060(5))

5) CONTROL TECHNOLOGY- Filter Protection 85% Humidity
The PES will not be operated if overall relative humidity, including humidity caused by misting, exceeds 85%. (WAC 246-247-040(5) and WAC 246-247-060(5))

6) CONTAMINATION CONTROL - PES Activities
Activities done under confinement structure of PES will be considered to be diffuse and fugitive activities unless under active ventilation conditions. (WAC 246-247-040(5) and WAC 246-247-060(5))

7) CONTAMINATION CONTROL - ARA
Adherence to contamination limits in the immediate work location for medium and high-hazard work will help ensure that the work area airborne radioactivity limits (i.e., 1.0E-09 µCi/ml for alpha emitters and 2E-06 µCi/ml for beta-gamma emitters) are not exceeded. (WAC 246-247-040(5) and WAC 246-247-060(5))

8) CONTAMINATION CONTROL - Soil Removal, Container Handling
Both Alpha and beta-gamma contamination field surveys shall be performed for all removable contamination surveys, prior to and during soil removal (excluding overburden removal) and overpacking activities and when placing degraded outer container contents into replacement containers. Alpha surveys alone shall be performed for direct readings of container surfaces. Beta/gamma direct readings are influenced by container contents, so are not as useful and are not required. (WAC 246-247-040(5) and WAC 246-247-060(5))

9) ALARACT APROVAL - Container Handling
The process for handling of abnormal or severely degraded containers as described in PROCESS DESCRIPTION: Excavation and Retrieval of Containers, for bagging, overpacking, placing degraded outer container contents into replacement containers or in-situ grouting is approved as meeting ALARACT, and these processes and associated records and procedures will be subject to inspection upon request by the department. (WAC 246-247-040(5) and WAC 246-247-060(5))

10) CONTAMINATION CONTROL - Daily Surveys
When exhaust system is shut down with inventory inside the PES, radiological control technicians will perform daily radiological swipe surveys on the access doors to the PES during normal work days. (WAC 246-247-040(5) and WAC 246-247-060(5))

11) ALTERNATIVE APPROVAL - Destructive Examination
Approval is given for alternative flow monitoring and sample extraction method for the PES. Destructive Examination (DE) of the final stage HEPA filter of the PES containment, which will be performed once per calendar year any time the system is used within the calendar year. This authorization will remain in force for three years from the date of issue of the license, additional extensions on the life of the system will require installation of continuous flow measurement and sample extraction in accordance with ANSI/HPS N13.1-1999. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

12) PROCESS DESCRIPTION - Portable Enclosure System (PES)
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The PES may be used for larger containers or multiple containers, based on the controls established in this emission unit. Due to the size and or weight of the waste packages, crane and rigging may be required in conjunction with use of the PES. (WAC 246-247-040(5) and WAC 246-247-060(5))

13) ABATEMENT TECHNOLOGY - Excavation and Retrieval of Containers
The administrative control points set in this emission unit for contamination, as monitored by standard radiological field instrumentation, will be used to bound emissions based on current efficiencies of typical RadCon field contamination instruments. The controls listed within this approval apply to TRU Waste Retrieval Project open air excavation and retrieval activities. (WAC 246-247-040(5) and WAC 246-247-060(5))

14) ABATEMENT TECHNOLOGY - PES
The PES is a portable hard-sided containment unit. Its function is to provide containment and filtered ventilation for work performed on degraded containers. The proposed abatement technology for the PES will consist of 2 banks of HEPA filters with an in-place testable efficiency of 99.95% for removal of test aerosol particulate with a median diameter of 0.7 micron. The annual average volumetric flow rate through this intermittently operated exhaust system is 2.8 cubic meters/s. The PES will be approximately 30 ft by 36 ft by 20 ft high, will weigh approximately 30 tons, and project engineering calculations have been performed to show that it will remain stable and in place in an 85 mph wind. In addition, negative pressure ensures no outleakage during routine operations. The enclosure is built of flanged panels but the doors have normal air gaps. Gravity dampers are installed on the air inlets to the enclosure to eliminate mass flow back into the environment. Stack height is approximately 26 feet from ground level (18 feet from top of fan outlet) and stack diameter is approximately 20 inches.

A heater is not installed in the PES exhauster because condensed moisture is not anticipated in the filter housing. During normal operation of the system, the air that is exhausted through the system is outside air. This is based on the fact that outside air is being drawn into the PES exhauster at the rate of approximately 2.8 cubic meters/s. and is not conditioned before entering the facility. There is no planned heat source within the structure during operation. As a result, the air will have basically the same properties as the outside air (dry-bulb temperature, humidity, dew point temperature, etc.). A misting system is planned to be used in the PES to help reduce the amount of airborne particulate that could be suspended during box retrieval. However, due to the considerable volume of air changes and the minimal rate of water required for misting used, it is not anticipated that the properties of the exhaust air will change substantially due to the misting (i.e., increase moisture content, change dew point, etc.). As a result, since the air entering the exhaust system will be basically at the same temperature as the outside air, condensation will not occur because the dew point temperature will not be achieved.

A seal pot will be located at the inlet end of the skid to provide sufficient space as a precaution for any condensate to drain from the filter train or the fan housing. The seal pot will have low added water limits to ensure there will be enough water in the pot to prevent a contaminant escape air path, and a high limit to prevent overflow of the seal pot, leakage of water, or wetting of the filter housing or fan housing. (WAC 246-247-040(5) and WAC 246-247-060(5))

15) CONTROL TECHNOLOGY - Filter Protection
The PES will be operated as an unheated structure whenever the HEPA exhaust system is in operation. (WAC 246-247-040(5) and WAC 246-247-060(5))

16) CONTAMINATION DOCUMENTATION - Exposed Packages
During repackaging activities (i.e., when transferring the contents of a degraded container into a new container or containers) an operations log will be kept noting conditions of the transferred contents/packages.. RadCon will generate and retain radiological records documenting air sample results and removable contamination conditions during retrieval of each container. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 1326

200W 296-P-53

Vapor Extraction System

This is a MINOR, ACTIVELY ventilated emission unit.

TRU Waste Retrieval

Emission Unit Information

Stack Height: ft. m. Stack Diameter ft. m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Filter		

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)	Near Field Monitoring	All radionuclides which could contribute greater than 0.1 mrem/yr to the MEI, or represent greater than 10% of the unabated PTE or represent greater than 25% of the abated dose.	Once per month when operating.

Sampling Requirements Smears of the exhuast vent when the system is operated at any time within a month.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The VES will be used to remove volatile organic compounds from soil gases and vapors from vents located in 218-W-3A

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Vapor Extraction System Operation (Replaces NOC 804)	AIR 16-1224	12/19/2016	1039

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.50E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Transuranic waste retrieval involves the processes for removing and dispositioning buried suspect transuranic mixed low-level radioactive waste (hereafter called TRU waste) from Hanford Site burial trenches for storage or disposal at other approved locations. Dispositioning is the orderly administration and handling of waste (including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys.

See the following for a detailed description of specific controls/conditions for each EU associated with the Transuranic Waste Retrieval Project:

EU 455 Hanford Sitewide W-PORTEX 007
EU 1440 200 Area Diffuse/ Fugitive; Operation of the Transuranic Waste Retrieval Project
EU 755 Mobile Drum Venting System (Active Ventilation) (MDVS)
EU 756 Mobile Drum Venting System (Passive Ventilation) (MDVS)
EU 1181 Categorical Drum Venting System 2 (DVS2)
EU 1322 Portable Enclosure System #1 (PES)
EU 1326 Vapor Extraction System (VES)
EU 1327 Next Generation Retrieval (NGR)

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.50E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	2.50E-03	Liquid/Particulate Solid

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.

Cs - 137	3.80E-02	Liquid/Particulate Solid

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) RESTRICTION ON STARTUP
Prior to putting EU 1326, Vapor Extraction System into service, USDOE will provide WDOH with the technical specifications for the fan and filter housings. WDOH will need to approve and reissue the License for Operation of the Transuranic Waste Retrieval Project prior to startup.

5) RELEASE RATES - VES
It is assumed that there is a potential to have two degraded drums within the trench for the basis of the APQ, since only a portion of the trench is vented at any given time. Using a release fraction of 1E-03 for particulates, the predicted release rate (unabated) for the VES without any emissions control equipment is 4.0E 02 Ci/Yr. The predicted release rate (abated) with emissions control equipment is the same as unabated. The predicted release rates for the representative radionuclides Am-241+Progeny and Cs 137+Progeny are as follows:

Unabated PTE;	Am-241+Progeny	2.5E-03 Ci/yr	:	Cs-137+Progeny	3.8E-02 Ci/yr
Abated PTE;	Am-241+Progeny	2.5E-03 Ci/y	:	Cs-137+Progeny	3.8E 02 Ci/yr

(WAC 246-247-040(5) and WAC 246-247-060(5))

6) CONTROL TECHNOLOGY STANDARDS
The VES will contain HEPA-type filters, but no credit is taken for them in the system. This system will rely on the near facility monitors and, since there is no monitoring system in the VES, the listed standards are not applicable.

7) CONTAMINATION CONTROL - Confirmatory Monitoring
Periodic confirmatory monitoring will consist of periodic field surveys of swipes/smears taken at the exhaust point when the system is operated any time within a month, combined with the continuous monitoring provided by the

200 Area near facility ambient air monitoring network. (WAC 246-247-040(5) and WAC 246-247-060(5))

8) PROCESS DESCRIPTION - VES

This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The VES will be used to remove volatile organic compounds (VOCs) from soil gases and vapors from vents located in 218-W-3A. A powered and filtered system will be attached to the VES risers and operated in batch mode. This process will consist of venting the vapor space and will not include venting during excavation or retrieval activities. The existing vent lines in the burial grounds will be connected to a powered ventilation system which will remove VOCs from the vapor space. The entire trench will not be vented as a unit, but the powered venting system will be positioned over a section of the trench and then moved further along, connecting to the nearest VES riser(s) as required per project direction.

Flexible hoses are connected from the vents to the VES. Vapor from the vents may be drawn through a demister and primary water separator (dropout tank) before it passes through a HEPA-type filter. The vapor stream leaving may then pass through a cooler before reaching the primary granular-activated carbon (GAC) canister. From the primary GAC canister the vapor line flows into the polishing GAC canister. The vapor stream leaving the polishing GAC canister is exhausted out of the VES stack. (WAC 246-247-040(5) and WAC 246-247-060(5))

9) ABATEMENT TECHNOLOGY - Excavation and Retrieval of Containers

It is recognized that other radionuclides may be present in very limited quantities. Encountering contamination is expected during excavation. The administrative control points set in this emission unit for contamination, as monitored by standard radiological field instrumentation, will be used to bound emissions based on current efficiencies of typical RadCon field contamination instruments.

The controls listed within this approval apply to TRU Waste Retrieval Project open air excavation and retrieval activities. (WAC 246-247-040(5) and WAC 246-247-060(5))

10) ABATEMENT TECHNOLOGY - VES

Operation of the Vapor Extraction System: A VES powered ventilation system operated for several years in the LLBG as a Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) activity associated with the Groundwater Project. No radionuclide particulate emissions were detected from the VES vents during this operation. However, based on engineering estimates and the operation of not venting the entire trench at once, but in a series of sections, it is assumed that the equivalent radionuclide contents of two degraded containers per vented section will provide the basis for the source of potential emissions. A HEPA type filter may be used, but no credit is taken for abatement. The annual average volumetric flow rate through this exhaust system is 4.7E-02 cubic meters/s. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 1327

200W 296-P-52

Next Generation Retrieval (Active)

This is a MINOR, ACTIVELY ventilated emission unit.

TRU Waste Retrieval

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.66 ft. 0.20 m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
Controlled work area	Prefilter		Aerosol tested annually to 99.95% removal of a particulate with a median diameter of 0.7 micron.
Controlled work area	1st Stage HEPA Filter		Aerosol tested annually to 99.95% removal of a particulate with a median diameter of 0.7 micron.
Controlled work area	2nd Stage HEPA Filter		Aerosol tested annually to 99.95% removal of a particulate with a median diameter of 0.7 micron.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	All radionuclides which could contribute 10% of the potential TEDE.	Once per month anytime it is operated

Sampling Requirements Destructive Examination (DE) of the filters. Daily sampling of the access doors when exhaust system is shut down with inventory inside

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for the TRU retrieval project support decontamination and decommissioning operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Next Generation Retrieval (Active) Operation (Replaces NOC 804)	AIR 16-1225	12/19/2016	1040

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 9.40E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Transuranic waste retrieval involves the processes for removing and dispositioning buried suspect transuranic mixed low-level radioactive waste (hereafter called TRU waste) from Hanford Site burial trenches for storage or disposal at other approved locations. Dispositioning is the orderly administration and handling of waste

(including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys.

See the following for a detailed description of specific controls/conditions for each EU associated with the Transuranic Waste Retrieval Project:

EU 455 Hanford Sitewide W-PORTEX 007
EU 1440 200 Area Diffuse/ Fugitive; Operation of the Transuranic Waste Retrieval Project
EU 755 Mobile Drum Venting System (Active Ventilation) (MDVS)
EU 756 Mobile Drum Venting System (Passive Ventilation) (MDVS)
EU 1181 Categorical Drum Venting System 2 (DVS2)
EU 1322 Portable Enclosure System #1 (PES)
EU 1326 Vapor Extraction System (VES)
EU 1327 Next Generation Retrieval (NGR)

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.90E-01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	3.10E-02	Liquid/Particulate Solid

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.

Cs - 137	4.70E-01	Liquid/Particulate Solid

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) CONTAMINATION CONTROL - NGR Activities
Activities done under confinement structure of and NGR will be considered to be diffuse and fugitive activities unless under active ventilation conditions (WAC 246-247-040(5) and WAC 246-247-060(5))

5) CONTAMINATION CONTROL - Soil Removal, Container Handling
Both Alpha and beta-gamma contamination field surveys shall be performed for all removable contamination surveys, prior to and during soil removal (excluding overburden removal) and overpacking activities and when placing degraded outer container contents into replacement containers. Alpha surveys alone shall be performed for direct readings of container surfaces. Beta/gamma direct readings are influenced by container contents, so are not as useful and are not required. (WAC 246-247-040(5) and WAC 246-247-060(5))

6) CONTROL TECHNOLOGY - Operational Conditions
When operating the NGR containment system, an in-line demister and in-line heating system must both be in operation upstream of the HEPA filters. (WAC 246-247-040(5) and WAC 246-247-060(5))

7) PROCESS DESCRIPTION - Excavation and Retrieval of Containers

This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Work will be performed in accordance with as low as reasonably achievable (ALARA) requirements as determined by the Radiological Control organization.
One type of configuration is a V notched trench, containers in some trenches may not have been stacked or placed in any orderly manner for burial. The specific steps or approach to uncovering the containers will vary according to the configuration of the trench to be uncovered, the type of containers to be retrieved, the proximity of nearby trenches or fences, the designated location of the spoils pile, the planned extent of the soil removal, and other considerations.

Work to be performed within some trenches may be performed within a weather resistant structure(s) that will be re-locatable along the trench. Weather enclosures are effectively used for similar remediation activities at other U.S. Department of Energy (DOE) sites and in general industrial use. Experience during retrieval activities has shown that operational efficiencies can be improved if the operations are protected from impacts due to weather such as wind, rain, snow, and temperature extremes. The use of a weather resistant enclosure could allow a more effective recovery from events involving degraded containers and potential contamination spreads.

Prior to and during overburden removal, subsurface surveys such as ground penetrating radar, electromagnetic inductance, and magnetometer are performed. These surveys provide information regarding container depth, configuration, type, and condition. They may also identify and locate underground obstructions.

The overburden soil will be removed to expose the waste containers. Excavation equipment will be chosen to effectively remove soil and retrieve the waste containers while minimizing damage to the containers. Excavation activities will be monitored to identify contamination that might be present and to implement controls to minimize emissions.

The most efficient methodology for removing the uncontaminated overburden from the containers will include the maximum use of conventional methods such as excavators, backhoes, front end loaders, brooms (boom mounted), or manual digging with shovels and similar hand tools. To excavate contaminated soil, hand tools predominantly will be used. Remotely-operated vehicles may be used to minimize personnel exposure in areas where high radiological and/or chemical hazards are discovered or anticipated. High efficiency particulate air (HEPA) filtered vacuums may be used for soil excavation for this application. Spot contamination removal will be done in accordance with the HEPA filtered vacuum unit (HVU) NOC (DOE/RL-97-50, Radioactive Air Emissions Notice of Construction for HEPA Filtered Vacuum Radioactive Air Emission Units, as amended). Within the V notched trenches, it is more likely that the use of a HEPA-filtered vacuum to remove larger quantities of soil from the top surface of buried containers and soil materials in the interstices surrounding containers will be employed. Any use of the sitewide HVU will be performed under the NOC applicable to the unit.

An estimated 300 cubic meters of soil at contamination detection levels occupies the void spaces between the containers buried in the trenches.
Excavation activities will be controlled closely. Heavy equipment, hand tools, light equipment, or HVUs will be used to complete the soil removal operations and to access and remove the plastic and plywood materials covering the containers.

All containers will be inspected to verify integrity. The container inspection will consist of a visual examination to determine if there are significant indications of corrosion, holes, dents or other visual deformities. All containers could be moved, turned, or otherwise relocated (manually or with powered equipment, slings, clamps, or appropriate rigging) to facilitate an adequate visual inspection.

The exposed containers will also be visually inspected and surveyed for contamination. Externally contaminated containers will have fixative applied or will be decontaminated. Containers may also be bagged or overpacked as needed. Overpacking means placing containers within a larger closed container. Bulging or potentially pressurized containers will be vented.

Severely degraded containers will be repackaged or in-situ grouted. Repackaging means transferring the contents of

a degraded container into a new container or containers. The entire contents of the container will not be sorted but will be placed into the new container or containers through the use of slings, clamshell excavators, manual labor, or the best available method that minimizes potential emissions.

Repackaging may include size reduction. Size reducing, cutting or disassembling material and equipment may be required to ensure personnel safety and/or more economical waste packaging. The process will include mechanical cutting techniques such as low speed sawing, drilling, snipping, and shearing. The process will also include bending and crimping to preclude the need for cutting operations where possible.

Containers may include but are not limited to drums, metal boxes, concrete boxes, fiberglass reinforced boxes, culverts, and sealed gloveboxes.

In-situ grouting will involve grouting around and/or throughout the waste, such that the entire waste container can be removed as a monolith. Retrieval activities will include appropriate disposition of small amounts of incidental contaminated soil (e.g., containerized or fixed in place). Larger areas of contamination could be fixed and the area posted as required by the Radiological Control organization for later disposition. Bulk transfer of contaminated soils for disposal also could occur.

Some containers will be assayed and, if they assay as TRU waste, they may be further examined to determine whether they contain items prohibited from disposal at the Waste Isolation Pilot Plant (WIPP). Any prohibited items will be removed at a later date. Unvented TRU waste containers may be staged for venting in the burial grounds or may be moved to the Central Waste Complex (CWC) or another treatment, storage or disposal (TSD) site for venting.

A number of retrieved containers are in good condition but are not vented. Although not technically meeting the definition of 'sealed' containers, Washington State Department of Health (WDOH) has recognized these as closed containers such that potential emissions from these non vented containers need not be included so far as potential emissions specific to waste during removal from the trenches. Once vented, the containers are included for calculating release rates for staging and handling operations. An estimated annual maximum of 15,200 vented containers of waste will be managed during the peak years of this project.

Containers may be staged in the burial grounds pending further processing or transfer. Waste containers are considered retrieved once transferred to an approved TSD facility. (WAC 246-247-040(5) and WAC 246-247-060(5))

8) PROCESS DESCRIPTION - Next Generation Retrieval (NGR)
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

NGR activities will consist of removal of containers, primarily drums but also boxes, from the burial grounds and venting the TRU waste containers using the Dart process. Bulging drums may be vented using the DVS2. Excavation, assay, and inspection activities will be the same as described in Condition 9, PROCESS DESCRIPTION - Excavation and Retrieval of Containers. TRU waste containers will be separated from low-level waste (LLW) containers during the NGR retrieval and characterization process. NGR containers that assay as LLW will not be routinely vented. The retrieved containers may require overpacking or repackaging. Overpacking is expected to be performed as described in Condition 9, PROCESS DESCRIPTION: Excavation and Retrieval of Containters. Many of the containers (approximately 250/yr) are expected to be so severely degraded that they cannot be overpacked. Their contents will be repackaged, as described in PROCESS DESCRIPTION: Excavation and Retreval of Containers. Venting of containers will also occur as described in PROCESS DESCRIPTION: Venting of Containers.
An exhaust system (NGR containment system) may be used for NGR container retrieval activities based on the controls established within Emission Unit 1327 Next Generation Retrieval. (WAC 246-247-040(5) and WAC 246-247-060(5))

9) ABATEMENT TECHNOLOGY - Excavation and Retrieval of Containers
The administrative control points set in this emission unit for contamination, as monitored by standard radiological field instrumentation, will be used to bound emissions based on current efficiencies of typical RadCon field

contamination instruments.
The controls listed within this approval apply to TRU Waste Retrieval Project open air excavation and retrieval activities. (WAC 246-247-040(5) and WAC 246-247-060(5))

10) ABATEMENT TECHNOLOGY - NGR Containment
The controls described below will be used for NGR containment system exhaust. The greenhouse design of this unit will incorporate an engineered active ventilation system to reduce to acceptable levels and minimize the risk of a radionuclide airborne discharge to the onsite or offsite environment during any retrieval operation.

The annual average volumetric flow rate through the intermittently operated NGR containment system exhauster is 0.47 cubic meters/sec (1000 cfm) providing up to 27.8 air exchanges per hour within the greenhouse. Ventilation for this NGR containment system will include greenhouse inlet filters, pressure control flaps, an inlet demister pad with a collection sump located inside the greenhouse, a heater unit, two (2) exhaust HEPA filters (1st and 2nd stage), downstream ducting, a downstream flow control damper, and an exhaust fan. Each HEPA filter stage will provide an in-place testable efficiency of at least 99.95% for removal of test aerosol particulate with a median diameter of 0.7 micron. The exhaust duct is 8 inches in diameter and will exhaust at least 3 feet above grade. When the NGR containment system is in use (with personnel inside and working with waste) the active ventilation system will be in operation. During ventilation system operation, airflow into this containment system will be through 30% efficient inlet filters. Containment tent pressure will be controlled with simple flaps that will cover these filters. The demister and heater unit will prevent water buildup on the HEPA filters and allow operation when the humidity is above 70% relative humidity and/or when misting is used during retrieval operations to control contamination spread. (WAC 246-247-040(5) and WAC 246-247-060(5))

11) WDOH NOTIFICATION - Implementing NGR Containment
During high hazard work activities, removable surface contamination is maintained less than 2,000,000 dpm/100 cm^2 alpha and/or less than 4 rad/hr/100 cm^2 beta-gamma, limited to a 1 ft^2 area. For an allowed increase in contaminated area footprint of 4 ft^2 the limiting condition for removable contamination will be 500,000 dpm/100 cm^2 alpha and or 1rad/hr/100 cm^2 beta-gamma. Exceeding any of these contamination limits will require work to stop, and notification to Operation and RadCon management in accordance with the RWP. Notification to WDOH via email or the established procedures in the Environmental Notification program will be required. For work to continue above any of these limiting radiological conditions, the NGR containment system and commensurate controls will be implemented. The NGR containment exhaust system will be utilized to minimize the potential for contamination spreads outside of posted radiological areas. (WAC 246-247-040(5) and WAC 246-247-060(5))

12) ALTERNATIVE APPROVAL - Destructive Examination
Approval is given for alternative flow monitoring and sample extraction method for the NGR. Destructive Examination (DE) of the final stage HEPA filter of the NGR containment, which will be performed once per calendar year any time the system is used within the calendar year. This authorization will remain in force for three years from the date of issue of the license, additional extensions on the life of the system will require installation of continuous flow measurement and sample extraction in accordance with ANSI/HPS N13.1-1999. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

13) ALARACT APROVAL - Container Handling
The process for handling of abnormal or severely degraded containers as described in PROCESS DESCRIPTION-Excavation and Retrieval of Container, for bagging, overpacking, placing degraded outer container contents into replacement containers or in-situ grouting is approved as meeting ALARACT, and these processes and associated records and procedures will be subject to inspection upon request by the department. (WAC 246-247-040(5) and WAC 246-247-060(5))

14) CONTAMINATION CONTROL - Daily Surveys
When exhaust system is shut down with inventory inside the NGR, radiological control technicians will perform daily radiological swipe surveys on the access doors to the NGR during normal work days. (WAC 246-247-040(5) and WAC 246-247-060(5))

15) CONTAMINATION DOCUMENTATION - Exposed Packages
During repackaging activities (i.e., when transferring the contents of a degraded container into a new container or containers) an operations log will be kept noting conditions of the transferred contents/packages.. RadCon will generate and retain radiological records documenting air sample results and removable contamination conditions during retrieval of each container. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 1328

200E P-296A048-001

296-A-48

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AP TANK FARM

Emission Unit Information

Stack Height: 40.00 ft. 12.19 m. Stack Diameter 0.80 ft. 0.24 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 46.00 ft/second. 14.02 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	1 bank of prefilter; not required for abatement control.
	HEPA	2	2 HEPAs in series per bank; 2 banks; 1 HEPA per bank required operational.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Y-90, Cs-137, Eu-154, Pu-238, Pu-239, Pu-240, Am-241, Pu-241	Continuous

Sampling Requirements Record sample.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-AP Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-49. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-A-48 Operation (Replaced NOC 818)	AIR 17-107	1/1/2017	1028

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 7.10E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.40E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-A-48 and 296-A-49 ventilate the 241-AP Double Shell Tank (DST) Farm which consists of eight individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks.

The ventilation systems support current and future tank farms operations activities, waste feed delivery to and waste feed returns from Hanford's Waste Treatment and Immobilization Plant (WTP), and waste transfers in support of the Low Activity Waste Pretreatment System (LAWPS).

The 296-A-48 and 296-A-49 ventilation systems serve to remove heat and serve as containment systems for radioactive particulates present in the tank headspace. They ventilate/remove flammable gases that evolve from the liquid surface in the DSTs. After the air leaves the head space, the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored for radioactivity and sampled for radionuclide particulates.

The exhausters may be shut down for maintenance, testing and sampling purposes to evaluate waste conditions, meteorological effects, and/or ventilation configuration on individual DST ventilation

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241 2.20E+05 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137 3.90E+07 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated PTE and represents less than 25% of the abated dose.
Eu - 152	Eu - 154 6.00E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238 4.00E+03 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 5.60E+04 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pu - 240 1.40E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 241 7.40E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151

Sn - 126	Sr - 90 3.80E+07 Contributes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated PTE and represents less than 25% of the abated dose.	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90 3.80E+07 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.
Zr - 93		

4) WDOH APPROVAL-Log Approval TWINS
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms. (WAC 246-247-080(7))

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed using the release fraction for the tank inventory of 8.0 E-5.

6) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137 and Sr-90 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI. (WAC 246-247-110(8))

7) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 7.5 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series. If the final HEPA filter in the system exceeds 7.5 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels.

8) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork between the deentrainer and heater, along with the filter housing shall be insulated.

9) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on the applicable requirements from ASME N510 or ASME N511, and shall have a minimum efficiency of 99.95%.
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
(WAC 246-247-075(2))

10) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity is not directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained so that the relative humidity remains below 70%, based on psychometric charts and engineering calculations. Daily monitoring is not required over weekends and holidays when no waste disturbing activities are occurring.

11) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters.

12) ABATEMENT TECHNOLOGY-Condensate Control
The condensate collection system shall be operated and maintained to ensure confinement of tank headspace gases by preventing bypass of the HEPA filters through the condensate drain lines. This system should be operated and

maintained to ensure confinement of tank headspace gases and be protective of the HEPA filtration system by maintaining seal pot levels.

13) STANDARDS-Leak Testing of New or Altered Ductwork
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration. (WAC 246-247-075(2))

14) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field Check Requirements. (WAC 246-247-075(2))

15) CONTAMINATION CONTROL-Active Ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging), SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If active ventilation is not available, due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval.

Emission Unit ID: 1329

200E P-296A049-001

296-A-49

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AP TANK FARM

Emission Unit Information

Stack Height: 40.00 ft. 12.19 m. Stack Diameter 0.80 ft. 0.24 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 46.00 ft/second. 14.02 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	1 bank of prefilter; not required for abatement control.
	HEPA	2	2 HEPAs in series per bank; 2 banks; 1 HEPA per bank required operational.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Y-90, Cs-137, Eu-154, Pu-238, Pu-239, Pu-240, Am-241, Pu-241	Continuous

Sampling Requirements Record sample.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-AP Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-48. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-A-49 Operation (Replaced NOC 818)	AIR 17-108	1/1/2017	1029

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 7.10E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.40E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-A-48 and 296-A-49 ventilate the 241-AP Double Shell Tank (DST) Farm which consists of eight individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks.

The ventilation systems support current and future tank farms operations activities, waste feed delivery to and waste feed returns from Hanford's Waste Treatment and Immobilization Plant (WTP), and waste transfers in support of the Low Activity Waste Pretreatment System (LAWPS).

The 296-A-48 and 296-A-49 ventilation systems serve to remove heat and serve as containment systems for radioactive particulates present in the tank headspace. They ventilate/remove flammable gases that evolve from the liquid surface in the DSTs. After the air leaves the head space, the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored for radioactivity and sampled for radionuclide particulates.

The exhausters may be shut down for maintenance, testing and sampling purposes to evaluate waste conditions, meteorological effects, and/or ventilation configuration on individual DST ventilation

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241 2.20E+05 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137 3.90E+07 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated PTE and represents less than 25% of the abated dose.
Eu - 152	Eu - 154 6.00E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238 4.00E+03 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 5.60E+04 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pu - 240 1.40E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 241 7.40E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151

Sn - 126	Sr - 90 3.80E+07 Contributes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated PTE and represents less than 25% of the abated dose.	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90 3.80E+07 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.
Zr - 93		

4) WDOH APPROVAL-Log Approval TWINS
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms. (WAC 246-247-080(7))

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed using the release fraction for the tank inventory of 8.0 E-5.

6) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137 and Sr-90 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI. (WAC 246-247-110(8))

7) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 7.5 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series. If the final HEPA filter in the system exceeds 7.5 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels.

8) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork between the deentrainer and heater, along with the filter housing shall be insulated.

9) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on the applicable requirements from ASME N510 or ASME N511, and shall have a minimum efficiency of 99.95%.
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
(WAC 246-247-075(2))

10) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity is not directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained so that the relative humidity remains below 70%, based on psychometric charts and engineering calculations. Daily monitoring is not required over weekends and holidays when no waste disturbing activities are occurring.

11) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters.

12) ABATEMENT TECHNOLOGY-Condensate Control
The condensate collection system shall be operated and maintained to ensure confinement of tank headspace gases by preventing bypass of the HEPA filters through the condensate drain lines. This system should be operated and

maintained to ensure confinement of tank headspace gases and be protective of the HEPA filtration system by maintaining seal pot levels.

13) STANDARDS-Leak Testing of New or Altered Ductwork
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration. (WAC 246-247-075(2))

14) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field Check Requirements. (WAC 246-247-075(2))

15) CONTAMINATION CONTROL-Active Ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging), SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If active ventilation is not available, due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval.

Emission Unit ID: 1333

300

318 Building

This is a MINOR, FUGITIVE, non-point source emission unit.

300 Diffuse/Fugitive Emissions

Emission Unit Information

Stack Height: ft. m. Stack Diameter ft. m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology ALARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	Tracking system	As listed in condition 3 of this emission unit.	Tracking system.

Sampling Requirements Radionuclide emissions will be determined using 40 CFR 61 Appendix D calculations in lieu of monitoring.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
J-318 Fugitive Emissions from the 318 Building (Radiological Calibrations Laboratory), 300 Area, Hanford Site (Replaced NOC 815)	AIR 15-306	3/12/2015	948

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.80E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 318 Building provides technical services in internal dosimetry, external dosimetry, instrument calibration, repair, and materials testing for protecting the health of workers and the public, and providing liability protection for government and industrial customers. Additionally, workplace measurements are applied to research and development (R&D) activities to better understand and determine occupational exposures. Work activities may be performed “continuously” (i.e., year-round, normal-business, swing-shift, and night-shift hours).

In addition to the technical services, there is direct support for environment, health, safety and security systems. Product line R&D includes a strategic intent of assisting the government and individual customers to comply with exposure limits by providing accurate information about the level of exposure and dose to the workers from chemical and radioactive agents. The 318 Building also supports national nuclear security activities; it also stages and maintains equipment and performs team training for radiological assistance and response to radiological incidents.
The laboratory activities conducted in the 318 Building include:
•Basic and applied research in the areas of environmental health and sustainability.
•Developing methods for radioactive material sampling collection and analysis techniques.

•Developing methods to detect nuclear proliferation materials.
•Instrument testing with dispersible short-lived medical isotopes.
•Laboratory setup projects.
•Provide technical services in dosimetry and instrumentation (e.g., calibrations, and ANSI N42 equipment testing).
•Radiation testing on equipment and materials.
•Research activities involving the use and creation of mixed activation products (MAPs) mixed fission products (MFPs), and naturally-occurring radioactive materials, actinides and standards.
•Research and laboratory activities that may include processes where the temperature may be equal to or exceed 100ºC.
•Research capabilities to support determining occupational and environmental doses and exposures.
•Research capabilities to support the development of radiation detection and measuring instruments.
•Support for national nuclear security and radiological assistance activities (e.g., equipment and sample management, and training).

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.80E-04 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	Gas	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Beta - 0	Gas	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ac - 225	Ac - 227	Ac - 228	Ag - 108 m	Ag - 108
Ag - 109 m	Ag - 110 m	Ag - 110	Ag - 111	Ag - 112
Al - 26	Al - 28	Am - 240	Am - 241	Am - 242 m
Am - 242	Am - 243	Am - 245	Am - 246	Ar - 37
Ar - 39	Ar - 41	Ar - 42	As - 74	As - 76
As - 77	At - 217	Au - 193	Au - 194	Au - 195
Au - 196	Au - 198	Au - 198 m	Au - 199	Ba - 131
Ba - 133	Ba - 133 m	Ba - 137 m	Ba - 139	Ba - 140
Ba - 141	Ba - 142	Ba - 143	Be - 10	Be - 7
Bi - 207	Bi - 208	Bi - 210 m	Bi - 210	Bi - 211
Bi - 212	Bi - 213	Bi - 214	Bk - 247	Bk - 249
Bk - 250	Br - 82	Br - 82 m	Br - 83	Br - 84
Br - 84 m	Br - 85	C - 11	C - 14	C - 15
Ca - 41	Ca - 45	Ca - 47	Cd - 107	Cd - 109
Cd - 111 m	Cd - 113 m	Cd - 113	Cd - 115 m	Cd - 115
Cd - 117	Cd - 117 m	Ce - 139	Ce - 141	Ce - 142
Ce - 143	Ce - 144	Cf - 249	Cf - 250	Cf - 251
Cf - 252	Cl - 36	Cm - 241	Cm - 242	Cm - 243
Cm - 244	Cm - 245	Cm - 246	Cm - 247	Cm - 248
Cm - 250	Co - 56	Co - 57	Co - 58	Co - 60
Co - 60 m	Cr - 49	Cr - 51	Cr - 55	Cs - 131
Cs - 132	Cs - 134	Cs - 134 m	Cs - 135	Cs - 136
Cs - 137	Cs - 138	Cs - 139	Cs - 140	Cs - 141

Cu - 64	Cu - 66	Cu - 67	Dy - 159	Dy - 165
Dy - 169	Er - 169	Er - 171	Es - 254	Eu - 150
Eu - 152	Eu - 152 m	Eu - 154	Eu - 155	Eu - 156
Eu - 157	F - 18	Fe - 55	Fe - 59	Fr - 221
Fr - 223	Ga - 67	Ga - 68	Ga - 70	Ga - 72
Gd - 148	Gd - 149	Gd - 151	Gd - 152	Gd - 153
Gd - 159	Ge - 68	Ge - 71	Ge - 71 m	Ge - 75
Ge - 77	Ge - 77 m	H - 3	Hf - 175	Hf - 178 m
Hf - 179 m	Hf - 181	Hf - 182	Hg - 203	Ho - 163
Ho - 166	Ho - 166 m	I - 122	I - 123	I - 125
I - 126	I - 128	I - 129	I - 130	I - 130 m
I - 131	I - 132	I - 132 m	I - 133	I - 133 m
I - 134	I - 134 m	I - 135	In - 106	In - 111
In - 113 m	In - 114 m	In - 114	In - 115	In - 115 m
In - 116	In - 116 m	In - 117	In - 117 m	Ir - 189
Ir - 190	Ir - 192	Ir - 194	K - 40	K - 42
Kr - 81	Kr - 81 m	Kr - 83 m	Kr - 85	Kr - 85 m
Kr - 87	Kr - 88	Kr - 89	Kr - 90	La - 137
La - 138	La - 140	La - 141	La - 142	La - 144
Lu - 177	Lu - 177 m	Mg - 27	Mg - 28	Mn - 52
Mn - 54	Mn - 56	Mo - 103	Mo - 104	Mo - 105
Mo - 93	Mo - 99	N - 13	Na - 22	Na - 24
Na - 24 m	Nb - 100	Nb - 101	Nb - 103	Nb - 91
Nb - 91 m	Nb - 92	Nb - 93 m	Nb - 94	Nb - 95
Nb - 95 m	Nb - 96	Nb - 97	Nb - 97 m	Nb - 98
Nd - 144	Nd - 147	Ni - 56	Ni - 57	Ni - 59
Ni - 63	Ni - 65	Np - 235	Np - 236	Np - 237
Np - 238	Np - 239	Np - 240	Np - 240 m	O - 15
O - 19	Os - 191	P - 32	P - 33	Pa - 231
Pa - 233	Pa - 234	Pa - 234 m	Pb - 203	Pb - 209
Pb - 210	Pb - 211	Pb - 212	Pb - 214	Pd - 103
Pd - 107	Pd - 109	Pd - 112	Pm - 143	Pm - 144
Pm - 145	Pm - 146	Pm - 147	Pm - 148 m	Pm - 148
Pm - 149	Pm - 151	Po - 208	Po - 209	Po - 210
Po - 211	Po - 212	Po - 213	Po - 214	Po - 215
Po - 216	Po - 218	Pr - 143	Pr - 144	Pr - 144 m
Pt - 191	Pt - 192	Pt - 193	Pt - 193 m	Pt - 195 m
Pt - 197 m	Pt - 197	Pt - 198	Pt - 199	Pt - 199 m
Pu - 234	Pu - 236	Pu - 237	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242	Pu - 243	Pu - 244
Pu - 246	Ra - 223	Ra - 224	Ra - 225	Ra - 226

Ra - 228	Rb - 81	Rb - 82	Rb - 83	Rb - 84
Rb - 86	Rb - 87	Rb - 88	Rb - 89	Rb - 90
Rb - 90 m	Re - 186	Re - 187	Re - 188	Rh - 101
Rh - 102	Rh - 102 m	Rh - 103 m	Rh - 104	Rh - 105
Rh - 105 m	Rh - 106	Rn - 219	Rn - 220	Rn - 222
Rn - 224	Ru - 103	Ru - 105	Ru - 106	Ru - 97
S - 35	Sb - 122	Sb - 124	Sb - 125	Sb - 126
Sb - 126 m	Sb - 127	Sb - 129	Sc - 44	Sc - 46
Sc - 47	Sc - 48	Se - 75	Se - 79	Se - 79 m
Si - 31	Si - 32	Sm - 145	Sm - 146	Sm - 147
Sm - 148	Sm - 151	Sm - 153	Sm - 157	Sn - 113
Sn - 117 m	Sn - 119 m	Sn - 121 m	Sn - 121	Sn - 123
Sn - 125	Sn - 126	Sr - 82	Sr - 85	Sr - 87 m
Sr - 89	Sr - 90	Sr - 91	Sr - 92	Ta - 179
Ta - 180	Ta - 182	Ta - 182 m	Ta - 183	Tb - 157
Tb - 158	Tb - 160	Tb - 161	Tc - 101	Tc - 103
Tc - 106	Tc - 95 m	Tc - 95	Tc - 97	Tc - 97 m
Tc - 98	Tc - 99	Tc - 99 m	Te - 121 m	Te - 121
Te - 123	Te - 123 m	Te - 125 m	Te - 127 m	Te - 127
Te - 129 m	Te - 129	Te - 131	Te - 131 m	Te - 132
Te - 133	Te - 133 m	Te - 134	Th - 227	Th - 228
Th - 229	Th - 230	Th - 231	Th - 232	Th - 233
Th - 234	Ti - 44	Ti - 45	Ti - 51	Tl - 201
Tl - 204	Tl - 206	Tl - 207	Tl - 208	Tl - 209
Tm - 168	Tm - 170	Tm - 171	U - 232	U - 233
U - 234	U - 235	U - 235 m	U - 236	U - 237
U - 238	U - 239	U - 240	V - 48	V - 49
W - 181	W - 185	W - 187	W - 188	Xe - 122
Xe - 123	Xe - 125	Xe - 127	Xe - 127 m	Xe - 129 m
Xe - 131 m	Xe - 133	Xe - 133 m	Xe - 135	Xe - 135 m
Xe - 137	Xe - 138	Xe - 139	Y - 88	Y - 90
Y - 90 m	Y - 91	Y - 91 m	Y - 92	Y - 93
Yb - 164	Yb - 169	Yb - 175	Yb - 177	Zn - 65
Zn - 69	Zn - 69 m	Zr - 100	Zr - 88	Zr - 89
Zr - 93	Zr - 95	Zr - 97	Zr - 98	Zr - 99

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) ABATEMENT TECHNOLOGY-Emission Control System
The 318 Building has multiple emission points that may or may not be actively ventilated. Emissions from this non-point source are essentially fugitive in nature. There is currently no abatement technology credited for the 318 Building. No emission controls are proposed for this activity because of the low quantities of radioactive material that may be used or stored. Since no control devices are proposed, the abated emissions and doses are the same as the unabated emissions and doses.

5) ALTERNATE APPROVAL- use of 40 CFR 61 Appendix D calculations for PTE
This emission unit is identified as PNNL Potential Impact Category 4 (PNNL 2012). Because the total unabated PTE for the emission unit is < 0.1 mrem/yr TEDE to the MEI, the radionuclide emissions will be determined using 40 CFR 61, Appendix D calculations in lieu of monitoring (EPA 1989).

Emission Unit ID: 1335

200W P-296S26-001

296-S-26

This is a MAJOR, ACTIVELY ventilated emission unit.

241-SY TANK FARM

Emission Unit Information

Stack Height: 40.00 ft. 12.19 m. Stack Diameter 0.80 ft. 0.24 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 42.00 ft/second. 12.80 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	1 bank of prefilter; not required for abatement control.
	HEPA	2	2 HEPAs in series per bank; 2 banks; 1 HEPA per bank required operational.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, Eu 154, Pu-238, Pu-239, Pu-240, Am-241	Continuous

Sampling Requirements Record sample.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-SY Tank Farm during storage, maintenance and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-S-27. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-S-26 Operation (Replaced NOC 817)	AIR 17-109	1/1/2017	1030

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.10E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 4.10E+02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-S-26 and 296-S-27 ventilate the 241-SY Double Shell Tank (DST) Farm which consists of three

individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks.

The ventilation systems support current and future tank farms operations activities, and transfers from Hanford's Waste Treatment and Immobilization Plant (WTP) and Low Activity Waste Pretreatment System (LAWPS).

The 296-S-26 and 296-S-27 ventilation systems serve to remove heat and serve as containment systems for radioactive particulates present in the tank headspace. They ventilate/remove flammable gases that evolve from the liquid surface in the DSTs. After the air leaves the head space, the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored for radioactivity and sampled for radionuclide particulates.

The exhausters may be shut down for maintenance, testing and sampling purposes to evaluate waste conditions, meteorological effects, and/or ventilation configuration on individual DST ventilation rates.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241 8.30E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137 1.50E+07 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated PTE and represents less than 25% of the abated dose.
Eu - 152	Eu - 154 2.20E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238 1.50E+03 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 2.10E+04 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pu - 240 5.10E+03 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90 1.40E+07 Contributes GREATER than 0.1	

mrem/yr to the MEI and represents GREATER than 10% of the unabated PTE and represents less than 25% of the abated dose.	Tc - 99	Th - 229
Th - 232	U - 232	U - 233
U - 234	U - 235	U - 236
U - 238	Y - 90	Zr - 93

4) WDOH APPROVAL-Log Approval TWINS
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms. (WAC 246-247-080(7))

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed using the release fraction for the tank inventory of 8.0 E-5.

6) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137 and Sr-90 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI. (WAC 246-247-110(8))

7) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 7.5 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series. If the final HEPA filter in the system exceeds 7.5 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels.

8) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork between the deentrainer and heater, along with the filter housing shall be insulated.

9) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on the applicable requirements from ASME N510 or ASME N511, and shall have a minimum efficiency of 99.95%.
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
(WAC 246-247-075(2))

10) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity is not directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained so that the relative humidity remains below 70%, based on psychometric charts and engineering calculations. Daily monitoring is not required over weekends and holidays when no waste disturbing activities are occurring.

11) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters.

12) ABATEMENT TECHNOLOGY-Condensate Control
The condensate collection system shall be operated and maintained to ensure confinement of tank headspace gases by preventing bypass of the HEPA filters through the condensate drain lines. This system should be operated and maintained to ensure confinement of tank headspace gases and be protective of the HEPA filtration system by maintaining seal pot levels.

13) STANDARDS-Leak Testing of New or Altered Ductwork
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration. (WAC 246-247-075(2))

14) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field Check Requirements. (WAC 246-247-075(2))

15) CONTAMINATION CONTROL-Active Ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging), SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If active ventilation is not available, due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval.

Emission Unit ID: 1342

200W P-296S27-001

296-S-27

This is a MAJOR, ACTIVELY ventilated emission unit.

241-SY TANK FARM

Emission Unit Information

Stack Height: 40.00 ft. 12.19 m. Stack Diameter 0.80 ft. 0.24 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 42.00 ft/second. 12.80 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	1 bank of prefilter; not required for abatement control.
	HEPA	2	2 HEPAs in series per bank; 2 banks; 1 HEPA per bank required operational.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, Eu 154, Pu-238, Pu-239, Pu-240, Am-241	Continuous

Sampling Requirements Record sample.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-SY Tank Farm during storage, maintenance and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-S-26. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
296-S-27 Operation (Replaced NOC 817)	AIR 17-110	1/1/2017	1031

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.10E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 4.10E+02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-S-26 and 296-S-27 ventilate the 241-SY Double Shell Tank (DST) Farm which consists of three

individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks.

The ventilation systems support current and future tank farms operations activities, and transfers from Hanford's Waste Treatment and Immobilization Plant (WTP) and Low Activity Waste Pretreatment System (LAWPS).

The 296-S-26 and 296-S-27 ventilation systems serve to remove heat and serve as containment systems for radioactive particulates present in the tank headspace. They ventilate/remove flammable gases that evolve from the liquid surface in the DSTs. After the air leaves the head space, the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored for radioactivity and sampled for radionuclide particulates.

The exhausters may be shut down for maintenance, testing and sampling purposes to evaluate waste conditions, meteorological effects, and/or ventilation configuration on individual DST ventilation rates.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241 8.30E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137 1.50E+07 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents GREATER than 10% of the unabated PTE and represents less than 25% of the abated dose.
Eu - 152	Eu - 154 2.20E+04 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238 1.50E+03 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 2.10E+04 Contr butes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pu - 240 5.10E+03 Contributes GREATER than 0.1 mrem/yr to the MEI and represents LESS than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90 1.40E+07 Contributes GREATER than 0.1	

mrem/yr to the MEI and represents GREATER than 10% of the unabated PTE and represents less than 25% of the abated dose.	Tc - 99	Th - 229
Th - 232	U - 232	U - 233
U - 234	U - 235	U - 236
U - 238	Y - 90	Zr - 93

4) WDOH APPROVAL-Log Approval TWINS
The annual possession quantity (APQ) shall be tracked on a WDOH approved log. WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the logging mechanism for APQs of radionuclide source terms. (WAC 246-247-080(7))

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed using the release fraction for the tank inventory of 8.0 E-5.

6) WDOH NOTIFICATION-Change in PTE Calculations
The department will be notified if radionuclides other than Cs-137 and Sr-90 are identified that contribute greater than 10% of the PTE or greater than 0.1 mrem/yr TEDE to the MEI. (WAC 246-247-110(8))

7) WDOH NOTIFICATIONS-Differential Pressure Out of Range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored recorded and trended a minimum of weekly. The exhaust system will be configured to automatically shut down at 7.5 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series. If the final HEPA filter in the system exceeds 7.5 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels.

8) ABATEMENT TECHNOLOGY-Ductwork Insulation
All ventilation ductwork between the deentrainer and heater, along with the filter housing shall be insulated.

9) ABATEMENT TECHNOLOGY-HEPA Filter Testing
The HEPA filters are in-place leak tested annually in accordance with a written procedure that addresses testing and visual inspections based on the applicable requirements from ASME N510 or ASME N511, and shall have a minimum efficiency of 99.95%.
In addition, the following conditions require in-place leak testing of the HEPA filters (the filter system to be retested):
•HEPA filter replacement
(WAC 246-247-075(2))

10) ABATEMENT TECHNOLOGY-Filter Protection
The relative humidity shall be maintained below 70%. If the relative humidity is not directly measured, the ventilation system exhauster operating temperature will be monitored daily to ensure that the appropriate temperature is maintained so that the relative humidity remains below 70%, based on psychometric charts and engineering calculations. Daily monitoring is not required over weekends and holidays when no waste disturbing activities are occurring.

11) ABATEMENT TECHNOLOGY-Temperature Values in the Airstream
The airstream temperature is monitored to verify that it is below the 200°F limit established for continuous operation and 250°F limits established for periodic operation to protect the HEPA filters.

12) ABATEMENT TECHNOLOGY-Condensate Control
The condensate collection system shall be operated and maintained to ensure confinement of tank headspace gases by preventing bypass of the HEPA filters through the condensate drain lines. This system should be operated and maintained to ensure confinement of tank headspace gases and be protective of the HEPA filtration system by maintaining seal pot levels.

13) STANDARDS-Leak Testing of New or Altered Ductwork
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g., replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct, and demister flushing) are not considered to be alteration. (WAC 246-247-075(2))

14) STANDARDS-Stack Monitoring Systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements also referenced in 40 CFR 61 App. B, Method 114, Table 2 - Maintenance, Calibration, and Field Check Requirements. (WAC 246-247-075(2))

15) CONTAMINATION CONTROL-Active Ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging), SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If active ventilation is not available, due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval.

Emission Unit ID: 1370

300 EP-331-09-S

EP-331-09-S

This is a MINOR, ACTIVELY ventilated emission unit.

331 LIFE SCI LAB

Emission Unit Information

Stack Height: 46.00 ft. 14.02 m. Stack Diameter 3.33 ft. 1.01 m.

Average Stack Effluent Temperature: 75 degrees Fahrenheit. 24 degrees Celsius.

Average Stack ExhaustVelocity: 39.60 ft/second. 12.07 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	None		

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)	Determined using 40 CFR 61 Appendix D calculations in lieu of monitoring	As listed in condition 3 of this emission unit.	Inventory

Sampling Requirements The radioactive material inventory will be tracked throughout the year to ensure that the yearly emission limit is not exceeded.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The mission of the 331 Building is to conduct fundamental science and develop environmental technology. The 331 Building provides research capabilities to study the interactions of chemicals and radionuclides with plants, animals, and microorganisms and the fate of chemicals and radionuclides in the environment. The building also has research capabilities for nuclear magnetic resonance (NMR) and actinide chemistry.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
The Operation of EP-331-09-S in the North Wing at the Life Sciences Laboratory (331 Building)	AIR 13-1008	10/28/2013	906

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 9.93E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The mission of the 331 Building is to conduct fundamental science and develop environmental technology. Research activities conducted in the 331 Building support the Hanford Site environmental mission and other key DOE missions of national and international importance. Research activities performed within the 331 Building include the use of radioactive materials. Laboratory processes are conducted "continuously" (i.e., year-round, during normal business, swing-shift, night-shift, and weekend hours). The 331 Building provides research capabilities to study the interactions of chemicals and radionuclides with plants, animals, and microorganisms and the fate of chemicals and radionuclides in the environment. The building also has research capabilities for Nuclear Magnetic Resonance (NMR) and actinide chemistry.

The research activities conducted in the 331 Building, emission unit EP-331-09-S include:

- Actinide chemistry involving liquids and solids.
- Examining the uptake and transformation effects of radionuclides in soils, plants, animals, and microorganisms.
- Experimental studies with molecular and cellular processes.

- Laboratory setup projects involving fume hood removals/upgrades and ductwork tie-in.
- Measurements of exposures to physical, radiological, and chemical agents.
- Non-dispersible radioactive material uses in research programs.
- NuNMR spectroscopic experiments with radioactive and non-radioactive materials.

Processes in which temperatures may exceed 100 degrees centigrade.

- Research activities involving various types of radioactive material, including mixed activation products (MAPs), Mixed fission products (MFPs), and naturally-occuring radioactive material, actinides, and a wide range of standards and tracer radionuclides.
- Studies with radioactive materials in biological and non-biological systems.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 9.93E-04 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Ac - 225	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ac - 227	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ac - 228	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 108	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 108 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 109 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 110	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 110 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 111	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Al - 26	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Al - 28	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Am - 241	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Am - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Am - 242	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Am - 242 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Am - 243	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Am - 245	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Am - 246	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ar - 37	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ar - 39	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ar - 41	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ar - 42	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

As - 74	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

As - 76	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

As - 77	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

At - 217	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Au - 195	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Au - 198	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Au - 198 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 133	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 133 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 137 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Be - 10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Be - 7	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 207	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 210 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 213	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bk - 247	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bk - 249	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bk - 250	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 82	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 82 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 83	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 84	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 84 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 85	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 11	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 14	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 15	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ca - 41	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ca - 45	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ca - 47	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 107	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 109	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 111 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 113	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 113 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 115	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 115 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 117	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 117 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 249	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 250	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 251	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 252	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cl - 36	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 242	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 243	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 244	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 245	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 246	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 247	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 248	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 250	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 56	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 57	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 58	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cr - 49	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cr - 51	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cr - 55	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 132	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 135	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 136	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.oC.

Cs - 137	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 138	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cu - 64	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cu - 66	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Dy - 159	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Dy - 165	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Dy - 169	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Er - 169	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Er - 171	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Es - 254	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 150	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 152	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 152 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 154	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 155	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 156	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 157	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

F - 18	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fe - 55	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fe - 59	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fr - 221	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fr - 223	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ga - 67	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ga - 68	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ga - 70	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ga - 72	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Gd - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Gd - 149	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Gd - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Gd - 152	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Gd - 153	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 68	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 71	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 71 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 75	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 77	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 77 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

H - 3	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 175	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 178 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 179 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 181	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 182	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hg - 203	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ho - 163	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ho - 166	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ho - 166 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 122	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 123	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 125	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 126	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 128	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 129	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 130	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 130 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 131	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 132	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 132 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 133	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 133 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 134	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 134 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 135	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 111	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 113 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 114	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 114 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 115	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 115 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 116	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 116 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 117	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 117 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ir - 192	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

K - 40	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

K - 42	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 81	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 81 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 83 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 85	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 85 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 87	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 88	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 89	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 90	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 137	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 138	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Lu - 177	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Lu - 177 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mg - 27	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mg - 28	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 52	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 54	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 56	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 104	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

N - 13	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 22	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 24	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 24 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 100	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 101	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 91 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 92	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 93 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 94	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 95 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 97 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 98	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nd - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nd - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 56	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 59	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 63	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 239	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 240 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

O - 15	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

O - 19	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Os - 191	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

P - 32	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

P - 33	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 231	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 234 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 107	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 109	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 145	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 146	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 148 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 149	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 213	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 215	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 216	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 218	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 144 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 239	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 242	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 243	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 244	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 246	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 223	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 224	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 225	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 228	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 81	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 83	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 84	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 86	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 87	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 90 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Re - 186	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Re - 187	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Re - 188	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 101	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 102 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 102	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 103 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 104	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 105 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 219	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 220	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 222	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 224	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

S - 35	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 122	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 124	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 126	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 126 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 127	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 129	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sc - 44	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sc - 46	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sc - 47	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 75	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Si - 31	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Si - 32	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 145	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 146	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 153	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 157	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 113	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 117 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 119 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 121	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 121 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 123	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 126	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 85	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 87 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 92	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ta - 179	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ta - 180	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ta - 182	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ta - 182 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ta - 183	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 157	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 158	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 160	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 161	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 101	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 95 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 97 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 98	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 121	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 121 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 123	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 123 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 125 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 127	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 127 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 129	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 129 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 131 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 132	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 133 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 133	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 134	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 227	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 228	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 229	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 230	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 231	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 232	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ti - 44	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ti - 45	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ti - 51	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 201	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 204	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 206	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 207	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tm - 168	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tm - 170	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tm - 171	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 232	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 239	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

V - 48	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

V - 49	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

W - 181	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

W - 185	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

W - 187	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

W - 188	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 122	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 123	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 125	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 127	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 127 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 129 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 131 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 133	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 133 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 135	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 135 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 137	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 138	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 139	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 90 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 91 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 92	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 164	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 169	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 175	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 177	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zn - 69	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zn - 69 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 100	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 98	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ac - 225	Ac - 227	Ac - 228	Ag - 108 m	Ag - 108
Ag - 109 m	Ag - 110 m	Ag - 110	Ag - 111	Al - 26
Al - 28	Am - 241	Am - 242 m	Am - 242	Am - 243
Am - 245	Am - 246	Ar - 37	Ar - 39	Ar - 41
Ar - 42	As - 74	As - 76	As - 77	At - 217
Au - 195	Au - 198	Au - 198 m	Ba - 131	Ba - 133
Ba - 133 m	Ba - 137 m	Ba - 139	Ba - 140	Ba - 141
Ba - 142	Ba - 143	Be - 10	Be - 7	Bi - 207
Bi - 208	Bi - 210 m	Bi - 210	Bi - 211	Bi - 212
Bi - 213	Bi - 214	Bk - 247	Bk - 249	Bk - 250
Br - 82	Br - 82 m	Br - 83	Br - 84	Br - 84 m
Br - 85	C - 11	C - 14	C - 15	Ca - 41
Ca - 45	Ca - 47	Cd - 107	Cd - 109	Cd - 111 m
Cd - 113 m	Cd - 113	Cd - 115 m	Cd - 115	Cd - 117

Cd - 117 m	Ce - 139	Ce - 141	Ce - 142	Ce - 143
Ce - 144	Cf - 249	Cf - 250	Cf - 251	Cf - 252
Cl - 36	Cm - 241	Cm - 242	Cm - 243	Cm - 244
Cm - 245	Cm - 246	Cm - 247	Cm - 248	Cm - 250
Co - 56	Co - 57	Co - 58	Co - 60	Co - 60 m
Cr - 49	Cr - 51	Cr - 55	Cs - 131	Cs - 132
Cs - 134	Cs - 134 m	Cs - 135	Cs - 136	Cs - 137
Cs - 138	Cs - 139	Cs - 140	Cs - 141	Cu - 64
Cu - 66	Dy - 159	Dy - 165	Dy - 169	Er - 169
Er - 171	Es - 254	Eu - 150	Eu - 152	Eu - 152 m
Eu - 154	Eu - 155	Eu - 156	Eu - 157	F - 18
Fe - 55	Fe - 59	Fr - 221	Fr - 223	Ga - 67
Ga - 68	Ga - 70	Ga - 72	Gd - 148	Gd - 149
Gd - 151	Gd - 152	Gd - 153	Ge - 68	Ge - 71
Ge - 71 m	Ge - 75	Ge - 77	Ge - 77 m	H - 3
Hf - 175	Hf - 178 m	Hf - 179 m	Hf - 181	Hf - 182
Hg - 203	Ho - 163	Ho - 166	Ho - 166 m	I - 122
I - 123	I - 125	I - 126	I - 128	I - 129
I - 130	I - 130 m	I - 131	I - 132	I - 132 m
I - 133	I - 133 m	I - 134	I - 134 m	I - 135
In - 106	In - 111	In - 113 m	In - 114 m	In - 114
In - 115	In - 115 m	In - 116	In - 116 m	In - 117
In - 117 m	Ir - 192	K - 40	K - 42	Kr - 81
Kr - 81 m	Kr - 83 m	Kr - 85	Kr - 85 m	Kr - 87
Kr - 88	Kr - 89	Kr - 90	La - 137	La - 138
La - 140	La - 141	La - 142	La - 144	Lu - 177
Lu - 177 m	Mg - 27	Mg - 28	Mn - 52	Mn - 54
Mn - 56	Mo - 103	Mo - 104	Mo - 105	Mo - 93
Mo - 99	N - 13	Na - 22	Na - 24	Na - 24 m
Nb - 100	Nb - 101	Nb - 103	Nb - 91	Nb - 91 m
Nb - 92	Nb - 93 m	Nb - 94	Nb - 95	Nb - 95 m
Nb - 97	Nb - 97 m	Nb - 98	Nd - 144	Nd - 147
Ni - 56	Ni - 59	Ni - 63	Ni - 65	Np - 235
Np - 236	Np - 237	Np - 238	Np - 239	Np - 240
Np - 240 m	O - 15	O - 19	Os - 191	P - 32
P - 33	Pa - 231	Pa - 233	Pa - 234	Pa - 234 m
Pb - 209	Pb - 210	Pb - 211	Pb - 212	Pb - 214
Pd - 103	Pd - 107	Pd - 109	Pm - 143	Pm - 144
Pm - 145	Pm - 146	Pm - 147	Pm - 148 m	Pm - 148
Pm - 149	Pm - 151	Po - 208	Po - 209	Po - 210
Po - 211	Po - 212	Po - 213	Po - 214	Po - 215

Po - 216	Po - 218	Pr - 143	Pr - 144	Pr - 144 m
Pu - 234	Pu - 236	Pu - 237	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242	Pu - 243	Pu - 244
Pu - 246	Ra - 223	Ra - 224	Ra - 225	Ra - 226
Ra - 228	Rb - 81	Rb - 83	Rb - 84	Rb - 86
Rb - 87	Rb - 88	Rb - 89	Rb - 90	Rb - 90 m
Re - 186	Re - 187	Re - 188	Rh - 101	Rh - 102
Rh - 102 m	Rh - 103 m	Rh - 104	Rh - 105	Rh - 105 m
Rh - 106	Rn - 219	Rn - 220	Rn - 222	Rn - 224
Ru - 103	Ru - 105	Ru - 106	Ru - 97	S - 35
Sb - 122	Sb - 124	Sb - 125	Sb - 126	Sb - 126 m
Sb - 127	Sb - 129	Sc - 44	Sc - 46	Sc - 47
Se - 75	Se - 79	Se - 79 m	Si - 31	Si - 32
Sm - 145	Sm - 146	Sm - 147	Sm - 148	Sm - 151
Sm - 153	Sm - 157	Sn - 113	Sn - 117 m	Sn - 119 m
Sn - 121 m	Sn - 121	Sn - 123	Sn - 125	Sn - 126
Sr - 85	Sr - 87 m	Sr - 89	Sr - 90	Sr - 91
Sr - 92	Ta - 179	Ta - 180	Ta - 182	Ta - 182 m
Ta - 183	Tb - 157	Tb - 158	Tb - 160	Tb - 161
Tc - 101	Tc - 103	Tc - 106	Tc - 95 m	Tc - 95
Tc - 97	Tc - 97 m	Tc - 98	Tc - 99	Tc - 99 m
Te - 121 m	Te - 121	Te - 123	Te - 123 m	Te - 125 m
Te - 127 m	Te - 127	Te - 129 m	Te - 129	Te - 131
Te - 131 m	Te - 132	Te - 133	Te - 133 m	Te - 134
Th - 227	Th - 228	Th - 229	Th - 230	Th - 231
Th - 232	Th - 233	Th - 234	Ti - 44	Ti - 45
Ti - 51	Tl - 201	Tl - 204	Tl - 206	Tl - 207
Tl - 208	Tl - 209	Tm - 168	Tm - 170	Tm - 171
U - 232	U - 233	U - 234	U - 235	U - 236
U - 237	U - 238	U - 239	U - 240	V - 48
V - 49	W - 181	W - 185	W - 187	W - 188
Xe - 122	Xe - 123	Xe - 125	Xe - 127	Xe - 127 m
Xe - 129 m	Xe - 131 m	Xe - 133	Xe - 133 m	Xe - 135
Xe - 135 m	Xe - 137	Xe - 138	Xe - 139	Y - 88
Y - 90	Y - 90 m	Y - 91	Y - 91 m	Y - 92
Y - 93	Yb - 164	Yb - 169	Yb - 175	Yb - 177
Zn - 65	Zn - 69	Zn - 69 m	Zr - 100	Zr - 88
Zr - 89	Zr - 93	Zr - 95	Zr - 97	Zr - 98
Zr - 99				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Inventory – The radiological material used in this emission unit will be tracked using the Pacific Northwest National Laboratory Radiological Material Tracking system."

5)

6) RELEASE RATE - Emission unit will be limited to an unabated gross beta release rate of 5.10E-05 Curies/year for beta emitting isotopes.

7) MONITORING - The gross alpha and gross beta rates will be confirmed via 40 CFR 61, Appendix D calculations in lieu of monitoring.

Emission Unit ID: 1371

200 W-MARS-003

W-MARS-003

This is a MINOR, PASSIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 14.00 ft. 4.27 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive breather filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere through the MARS containment box.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
W-MARS-003 Containment Box Radial Breather Filter Operation (Replaced NOC 899)	AIR 17-710	7/27/2017	1254

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The containment box which encloses the MARS will be ventilated by two parallel installed radial filters (W-MARS-3 and W-MARS-4). These filters minimize contamination migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. A valve will be installed between the filters and the containment box so filters can be isolated from the box.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

10) EMISSION UNITS IDENTIFIED
The emission unit will be labeled at the filter.

Emission Unit ID: 1384

200 W-MARS-004

W-MARS-004

This is a MINOR, PASSIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 14.00 ft. 4.27 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive breather filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a Single-Shell Tank (SST) to vent to the atmosphere through the MARS containment box.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
W-MARS-004 Containment Box Radial Breather Filter Operation (Replaced NOC 908)	AIR 17-710	7/27/2017	1255

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Breather filters are passive emission units typically consisting of a high efficiency particulate air (HEPA) filter, filter housing, and isolation valve. The breather filters are designed to minimize the amount of radioactive particles emitted as a consequence of breathing due to barometric pressure changes and to allow flammable gases and other vapors to escape through passive ventilation. Two typical breather filter types are radial and G-1. The HEPA filters are qualified by the manufacturer to have a rated removal efficiency of 99.97%. Both radial and G-1 HEPA filters are compatible with high moisture environments and are rated for 100% relative humidity.
The containment box which encloses the MARS will be ventilated by two parallel installed radial filters (W-MARS-3 and W-MARS-4). These filters minimize contamination migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. A valve will be installed between the filters and the containment box so filters can be isolated from the box.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137
Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

7) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

8) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

9) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

10) EMISSION UNITS IDENTIFIED
The emission unit will be labeled at the filter.

Emission Unit ID: 1406

200 W-AZ-301 Tanker-001

A-AZ301 Tanker-001

This is a MINOR, PASSIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 12.50 ft. 3.81 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 75 degrees Fahrenheit. 24 degrees Celsius.

Average Stack ExhaustVelocity: 0.26 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive breather filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Confirmatory measurements and annual smear surveys	Total Alpha and Total Beta/Gamma.	Every 365 days

Sampling Requirements Smear survey on the outside of the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the AZ-301 tanker to vent to the atmosphere while filling.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
AZ-301 Tanker for Condensate Collection and Transport, Radial Breather Filter Operation (Replaced NOC 914)	AIR 17-710	7/27/2017	1256

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.35E+06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The AZ-301 Tanker project consists of operation of a pumping system to transport condensate from catch tank AZ-301 into the tanker. The condensate is transported to the Liquid Effluent Retention Facility, Effluent Treatment Facility, or another onsite licensed facility.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Am - 241	Am - 243
Ba - 137 m	C - 14	Cd - 113 m
Cm - 242	Cm - 243	Cm - 244
Co - 60	Cs - 134	Cs - 137

Eu - 152	Eu - 154	Eu - 155
H - 3	I - 129	Nb - 93 m
Ni - 59	Ni - 63	Np - 237
Pa - 231	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242
Ra - 226	Ra - 228	Ru - 106
Sb - 125	Se - 79	Sm - 151
Sn - 126	Sr - 90	Tc - 99
Th - 229	Th - 232	U - 232
U - 233	U - 234	U - 235
U - 236	U - 238	Y - 90
Zr - 93		

4) WDOH NOTIFICATION-Annual Survey Reporting Levels
The annual smear surveys are conducted to confirm levels are below 10,000 dpm/100 cm2 beta/gamma and 200 dpm/100 cm2 alpha. Results above these levels will be reported to WDOH.

5) WDOH ALTERNATE APPROVAL-Release Fractions
WDOH accepts that the PTE calculation shall be based on the inventory of material to be managed, using the release fraction for the tank inventory of 6.2E-9.

6) EMISSION UNITS IDENTIFIED
The emission unit shall be clearly labeled by Emission Unit ID and AEI ID number at the filter.(WAC 246-247-040(5))

7) WDOH ALTERNATE APPROVAL-Annual Replacement
Approval is given to replace HEPA filters on an annual basis as an alternative to ASME N-511 “In-Service Testing of Nuclear Air Treatment, Heating, Ventilation, and Air-Conditioning Systems" filter testing. The filter must have a minimum removal efficiency of 99.97% (WAC 246-247-075(4)).

8) WDOH ALTERNATE APPROVAL-Confirmatory Measurements
Confirmatory measurements of stack emissions shall be in accordance with Hanford's Near-Facility Environmental Monitoring Program and augmented by annual smear surveys of the filter unit.

9) RELEASE RATES-Radionuclide Inventory Tracking
WDOH authorizes approval of the Tank Waste Information Network System (TWINS) as the tracking mechanism of radionuclide inventory (WAC 246-247-080(7)).

10) ABATEMENT TECHNOLOGY-Breather Filter Operation
Breather filters normally operate continuously but may operate intermittently.

11) ABATEMENT CONTROL-Fill Level Limits
The tanker has an 8,000 gallon capacity. The condensate will be transported when the tanker is filled with approximately 7,000 gallons or less. (WAC 246-247-040(5))

12) ABATEMENT CONTROL-Air Flow Rates
The HEPA filter shall be rated for a flow rate higher than the maximum flow rate when tank is being filled. (WAC 246-247-040(5))

13) ABATEMENT CONTROL- Tanker Loading Activities-Volume Documentation
Volume of tanker contents shall be documented each day of filling operations. (WAC 246-247-040(5))

14) ABATEMENT CONTROL-Tanker Loading Activities-Periodically Surveyed
Appropriate connections shall be made between the source and the tanker. Connections will be periodically surveyed to verify that no leaks are occurring.

15) ABATEMENT CONTROL-Prior to Transport-Decontamination
Appropriate decontamination measures shall be performed to reduce residual external smearable radioactive contamination to transport release criteria before releasing the tanker for overland transport.
Removable contamination levels on the truck must be less than or equal to 1,000 dpm/100 cm^2 beta/gamma and less than or equal to 20 dpm/100 cm^2 alpha prior to transport.

16) ABATEMENT CONTROL-Prior to Transport-Valve Alignment Inspection
Inspections of the tanker vents and valves shall be performed and documented prior to transport.

17) ABATEMENT CONTROL-Prior to Transport-Fittings Disconnected and Closed
After filling the tanker, fittings shall be disconnected and closed and shall remain closed until commencement of unloading operations at LERF, ETF, or other onsite licensed emission units.

Emission Unit ID: 1413

200 200 P-296P035-001

High Purge Gas Core Sampling

This is a MINOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 20.00 ft. 6.10 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 120.00 ft/second. 36.58 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Filter	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-074 (3)	40 CFR 61, Appendix B Method 114	Cs-137, Sr-90	Annual, if used during the year

Sampling Requirements One of the following methods may be chosen for actual emissions reporting: nondestructive assay, sample of the filter, or other approved sampling method of the exhauster HEPA filter will be performed as a periodic confirmatory measurement.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a portable exhauster used to ventilate air from a core sampling system during sampling of waste tanks.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
CORE SAMPLING SYSTEM IN HIGH PURGE GAS MODE	AIR 15-1005	10/6/2015	919

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.12E-06 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 8.23E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) The portable ventilation system for the Core Sampler System in High Purge Gas Mode serves as an abatement system for radioactive particulates present in the tank headspace during core sampling. This Core Sampler Unit and exhauster are used intermittently and will not be used on actively ventilated tanks due to the possibility of reduced exhauster reliability when two dissimilar exhaust systems operate in parallel. Core sampling system operates in push mode or rotary mode, but under 10 scfm shall operate in accordance with the latest version ALARACT 2, “Tank Farm ALARACT Demonstration for Low Purge Gas Core Sampling.” Purge gas flow rates over 10 scfm shall operate under this NOC. WAC 246-247-060 (5).

   The Core Sampling Systems consist of a sampling platform transported to the tank to be sampled, a mobile x-ray unit, and a small HEPA-containing exhauster. At the sampling site, the platforms will be placed into position and aligned with the tank risers as appropriate.

   Typical operations associated with the operation of the Core Sampler in High Purge Gas Mode may include the following:
   •Riser opening according to the latest version of ALARACT 1 “Tank Farm ALARACT Demonstration for Riser Preparation / Opening.”

•Potential in tank video.
•Drill string containing the sampler will be rotated or pushed into the waste.
•Exhauster will be started prior to the beginning sampling using the high purge gas flow rates. Purge gas will be used to cool and to keep waste from entering the drill bit.
•Purge gas will be maintained less than exhauster flow rates.
•When collecting a sample, the airflow back into the drill string is sealed with either air or a barrier fluid.
•Once the sample is collected, it will be placed in a sealed container.
•When the drill string is depressurized, the air is vented back into the tank.
•The drill string will be capped or temporarily covered until connected to the shielded receiver.
•The drill string will be sleeved or decontaminated as it is removed from the tank and prepared for transport.
The sample will be contained during transport following the latest version of ALARACT 4, "Tank Farm Demonstration for Packaging and Transportation of Waste."

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 241 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 243 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ba - 137 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	C - 14 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cd - 113 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Cm - 242 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 244 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Co - 60 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 134 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 137 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Eu - 152 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 154 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
H - 3 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	I - 129 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Nb - 93 m Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ni - 59 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ni - 63 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Np - 237 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pa - 231 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pu - 240 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 241 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ra - 226 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ra - 228 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ru - 106 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 125 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Se - 79 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sm - 151 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sn - 126 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sr - 90 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Tc - 99 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Th - 229 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Th - 232 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 232 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
U - 233 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 234 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 235 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
U - 236 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Y - 90 Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Zr - 93 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

4) TECHNOLOGY- Annual testing
The HEPA filters are in-place leak tested annually, if used since the last testing, in accordance with a written procedure that addresses testing and visual inspections based on ASME N510 and ASME N511, and shall have a minimum efficiency of 99.95%. In addition , the in-place leak testing occurs when the HEPA filter is replaced and prior to use when the portable exhauster is moved. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

5) WDOH NOTIFICATION-Startup
Notification of initial startup is required fourteen days prior to actual startup. WAC 246-247-060 (5)

6) ABATEMENT - Sampling Controls for Riser
When sampling using high purge gas mode, the tank riser will be opened using controls specified in the latest version of ALARACT 1 "Tank Farm ALARACT Demonstration for Riser Preparation / Opening" WAC 246-247-060 (5)

7) MAINTENANCE-HEPA DP Gauge
The differential pressure across the HEPA filter will be monitored and the filter changed out if excessive loading of the filter occurs. The HEPA pressure limit will be based upon manufacturer’s recommendations (7 inches water gauge). WAC 246-247-060 (5)

8) RELEASE RATES-Operational Limits
Operations are in a batch mode as the core sampling system exhauster may operate periodically throughout the year in high purge gas flow mode, with operation limited to no more than 300 hours per year. WAC 246-247-060 (5)

Emission Unit ID: 1418

200

Tank Farm Diffuse and Fugitive

This is a MAJOR, FUGITIVE, non-point source emission unit.

Tank Farms

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[2]	40 CFR 61, Appendix B Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE or greater than 0.1 mrem/year to the MEI.	Samples collected are composited and reported per section 5.0 of the FF-01.

Sampling Requirements Per the sitewide ambient air monitoring program and section 5.0 of the FF-01 license samples will be collected from the existing near-facility and far-field monitoring stations.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit pertains to diffuse and fugitive emissions associated with Tank Farm operations. Some emissions are passive in nature, while others are the result of activities being performed. Tank Farm operations include activities encompassing 222-S Laboratory, evaporator facilities, double shell tank (DST) farms, single-shell tank (SST) farms, areas adjacent to the facilities, waste transfer lines between farms and facilities, valve pits, miscellaneous underground storage tanks and associated equipment in the area of the 200 East and 200 West Areas of the Hanford site and in the corridor in-between utilized for the cross site transfer line.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Tank Farm Operations Diffuse and Fugitive License	AIR 15-414	4/27/2015	945

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.94E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This Notice of Construction (NOC) pertains to diffuse and fugitive emissions which may occur in association with storage, modifications, construction, excavations, operation and maintenance activities, as well as during characterization and sampling, demolition of structures, installation of equipment, mixing, transfers, and retrieval of waste. This application is to replace previous approvals as well as address future activities of a similar nature, while others are the result of activities being performed. Tank Farm operations and activities encompassing 222-S Laboratory, evaporator facilities, double shell tank (DST) farms, single-shell tank (SST) farms, areas adjacent to those facilities, waste transfer lines between farms and facilities, valve pits, miscellaneous underground storage tanks and associated equipment in the area of the 200 East and 200 West Areas of the Hanford site and in the corridor in-between utilized for the cross site transfer line.

The 200 East and 200 West Diffuse/Fugitive license pertains to radiological air emissions from unregistered source or support new activities, modifications, construction, or decommissioning (as defined in WAC 246-247) which could result in a potential increase in emissions. Diffuse/fugitive radioactive air emissions are emissions which do not and could not reasonably be controlled by passing through a stack, active vent, or other functionally equivalent structure, and which are not feasible to directly measure and quantify. There are not any chemical processes associated with diffuse and fugitive air emissions. The physical activities that could contribute to diffuse/fugitive emissions are project related activities, excavation, drilling, demolition,

cutting, welding, tank access and air movers used for worker protection from non-radioactive hazards. Routine activities that are described and performed in accordance with an approved standing "As low as reasonably achievable control technology" (ALARACT) demonstration are excluded from this scope of this license.

The Tank Waste Information Network System (TWINS) was used to determine the radionuclide content of the inventory used for preparation of this NOC. Assumptions were used to develop an overall estimate of potential emissions. The maximally exposed individual (MEI) is determined using dispersion factors derived for use on the Hanford Site and published in DOE/RL-2006-29, Rev 1 “Calculating Potential-to-Emit Radiological Releases and Doses.”

This NOC includes related incidental activities that are routine in nature, involving minimal radiological potential emissions. These activities include waste handling, inspections, sampling, characterization, construction, modifications, surveillance, and maintenance of equipment, structures, and/or facilities. Activities associated with decontamination trailers are also considered incidental as are the installation and testing of equipment, piping, jumpers, structures, and/or facilities.

This NOC includes related incidental emissions associated with facilities or equipment no longer under active ventilation pending future disposition or use.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.94E-01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	7.50E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate is assumed to be Pu-239/240. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents. See condition number four for APQ release rate determination.

B/G - 0	3.00E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/gamma release rate is assumed to be Sr-90. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents. See condition number four for APQ release rate determination.

4) AIR EMISSIONS-APQ Release Rate Determination
Based on the Tank Waste Information Network System (TWINS) database of the entire tank farm inventory the ratio of alpha activity, Pu-239/240 and Am-241, would be 0.25% of the beta/gamma activity, Sr-90 and Cs-137. An estimate of 3.0 Ci of beta/gamma potential release is proposed to bound potential activities. Thus, the predicted annual abated and unabated potential release (the potential-to-emit) from activities covered by this NOC is estimated not to exceed 3 Ci/year beta/gamma, assumed to be Sr-90, and an additional 7.5 mCi/year alpha emitters, assumed to be Pu 239/240, from 200 East and/or 200 West. No credit was taken for administrative controls used to assure the overall emission potential is not exceeded.

5) AIR EMISSIONS-Release Rates-Recordkeeping
Unabated emission estimates for work activities performed under this NOC, except for activities considered incidental or outside the scope of this NOC, will be developed and tracked. The basis of the estimates associated with these activities will be documented. Documentation will include reference to the work document associated with the activity and an assigned unabated emission estimate for the activity using the potential release estimates developed and documented in a controlled document. In situations where the alpha contamination drives radiological risk rather than beta-gamma contamination and the alpha to beta-gamma activity ratio exceeds 2%, a calculation showing how compliance with the alpha release limit is met shall be maintained for WDOH review.

6) ABATEMENT TECHNOLOGY-General & Activity Specific
General controls, as described below, shall be applicable to all work activity. Activity specific abatement controls shall be implemented in addition to the appropriate general controls.

7) ABATEMENT TECHNOLOGY- GENERAL CONTROLS-Wind Speed
Tank farm outdoor activities that are impacted by and not sheltered from the adverse effect of wind will be curtailed if sustained wind speed exceeds 25 miles per hour (mph). A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings.

8) ABATEMENT TECHNOLOGY- GENERAL CONTROLS-Soil Disturbing Activities
Planned activities where there is an expectation of potentially disturbing radioactivity in the general area above 1,000 disintegrations per minute per 100 square centimeters (dpm/100 cm2) beta/gamma or 20 dpm/100 cm2 alpha shall be subject to a radiological work permit that will:

-Identify Health Physics Technician (HPT) coverage for the activity
-Specify suspension limits for the activity

9) ABATEMENT TECHNOLOGY -GENERAL CONTROLS-Contamination Limits
When contamination levels are expected to exceed 100,000 dpm/100 cm2 beta/gamma or 2,000 dpm/100 cm2 alpha the following controls shall be implemented to the extent applicable consistent with the latest version of the applicable radiological control manual (e.g. HNF 5183, Tank Farms Radiological Control Manual.)
-Decontamination; Wiping and rinsing prior to packaging and removal, tape, strippable paints
-Contamination Control; Wet methods, application of fixative, tape
-Confinement; Packaging, glovebags, sleeving, bagging, tenting, ground covers to prevent spread of contamination to the soil, wind screens, covers (i.e.tarps/plastic, sand, dirt, gravel, other cover device or structure)

10) ABATEMENT TECHNOLOGY- EXCAVATION AND BACKFILLING-Pneumatic Equipment & Contamination Limits
During excavation and backfilling, pneumatic driven tools/equipment shall not be used if contamination levels are expected to exceed 100,000 dpm/100cm2 area beta/gamma or 2,000 dpm/100 cm2 alpha. This limit does not apply to the use of electric or hydraulic driven tools or equipment.

11) ABATEMENT TECHNOLOGY- EXCAVATION AND BACKFILLING-Radiological Surveys
During excavation and backfilling, in process radiological surveys of material involved in the activity shall be performed to evaluate the need to implement additional general abatement controls.

12) ABATEMENT TECHNOLOGY- EXCAVATION AND BACKFILLING- Suppressants
During excavation and backfilling, suppressants such as water, fixatives, covers, or windscreens shall be available and shall be used as necessary, including at the end of each shift or when sustained winds are >20 mph. If contaminated (> 2,000 dpm/ 100 cm2 area beta/gamma or >20 dpm/100 cm2 alpha) soil and debris will remain inactive for greater than 24 hours suppressants shall be applied unless contaminated soils are frozen or it is raining, snowing, or other freezing precipitation is falling at the end of work operations.

13) ABATEMENT TECHNOLOGY- EXCAVATION AND BACKFILLING- Wind Speed
During excavation and backfilling, excavation of radioactive material shall cease if sustained winds exceed 20 mph. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings.

14) ABATEMENT TECHNOLOGY- EXCAVATION AND BACKFILLING- Contamination Levels
During excavation and backfilling, if material contamination levels >3,000,000 dpm/ 100 cm2 area beta/gamma or >400 dpm/100 cm2 alpha are encountered:
-Excavation and soil piles will be covered with plastic or fixative applied at the end of each shift and/or as necessary to prevent spread of contamination
-Excavation and soil piles will be containerized or covered (e.g. use of plastic or clean fill) if it is to be left for greater than 48 hours

15) ABATEMENT TECHNOLOGY- DEMOLITION ACTIVITIES - Pneumatic Equipment
During demolition of equipment, vehicles, structures or buildings, pneumatic driven tools/equipment shall not be used if contamination levels are expected to exceed 100,000 dpm/100 cm2 area beta-gamma or 2,000 dpm/100 cm2 alpha. This limit does not apply to the use of electric or hydraulic driven tools or equipment.

16) ABATEMENT TECHNOLOGY- DEMOLITION ACTIVITIES -Radiological Surveys
During demolition of equipment, vehicles, structures or buildings, in process radiological surveys of material involved in the activity will be performed to evaluate the need to implement general abatement controls.

17) ABATEMENT TECHNOLOGY- DEMOLITION ACTIVITIES -Suppressants
During demolition of equipment, vehicles, structures or buildings, suppressants such as water, fixatives, covers, or windscreens shall be available and will be used as necessary, including at the end of each shift or when sustained winds are >20 mph. If contaminated (> 2,000 dpm/ 100 cm2 area beta/gamma or >20 dpm/100 cm2 alpha) debris will remain inactive for greater than 24 hours suppressants shall be applied.

18) ABATEMENT TECHNOLOGY-DEMOLITION ACTIVITIES - Wind Speeds
During demolition of equipment, vehicles, structures or buildings, demolition activities of radioactive material shall cease if sustained winds exceed 20 mph. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings.

19) ABATEMENT TECHNOLOGY- DEMOLITION ACTIVITIES -Contamination Levels
During demolition of equipment, vehicles, structures or buildings, if material contamination levels >3,000,000 dpm/100 cm2 area beta/gamma or >400 dpm/100 cm2 alpha are encountered:
-Debris piles will be covered with plastic or fixative applied at the end of each shift and/or as necessary to prevent

spread of contamination
-Debris will be containerized or covered with plastic if it is to be left for greater than 48 hours

20) ABATEMENT TECHNOLOGY- DRILLING, SAMPLING OR CASING REMOVAL-Surveys
During borehole drilling, sampling and casing removal activities, in process radiological surveys of equipment or material involved in the activity will be performed as equipment is removed from the borehole to evaluate the need to implement general abatement controls.

21) ABATEMENT TECHNOLOGY- DRILLING, SAMPLING OR CASING REMOVAL-Suppressants
During borehole drilling, sampling and casing removal activities, if contaminated material is expected to be brought to the surface by the activity, suppressants such as water, fixatives, covers, or windscreens shall be available and will be used as necessary, including at the end of each shift or when sustained winds are >20 mph unless the material is containerized.

22) ABATEMENT TECHNOLOGY-DRILLING, SAMPLING OR CASING REMOVAL -Wind Speed
During borehole drilling, sampling and casing removal activities, if contaminated material is expected to be brought to the surface, borehole drilling or casing removal activities of radioactive material shall cease if sustained winds exceed 20 mph. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings.

23) ABATEMENT TECHNOLOGY- DRILLING, SAMPLING OR CASING REMOVAL -Liquids
During borehole drilling, sampling and casing removal activities, if liquids are to be managed as a part of drilling or sampling activities water which is collected in passively ventilated open top containers, will either be transferred into a tanker truck for transport to an appropriate treatment /storage facility or closed and transported to appropriate treatment /storage facility.

24) ABATEMENT TECHNOLOGY-DRILLING, SAMPLING OR CASING REMOVAL -Samples
During borehole drilling, sampling and casing removal activities, all contaminated samples will be containerized.

25) ABATEMENT TECHNOLOGY- DRILLING, SAMPLING OR CASING REMOVAL -Containers
During borehole drilling, sampling and casing removal activities, for containerized material, the exterior surface of the outer most container will be surveyed to confirm it is free of smearable contamination above release limits prior to shipment.

26) ABATEMENT TECHNOLOGY-CUTTING & WELDING-Cutting
Mechanical means (shears, saws, rotating cutting knives/wheels or using mechanical connectors) will be used when cutting/opening contaminated equipment or piping.

27) ABATEMENT TECHNOLOGY-CUTTING & WELDING-Welding
When welding contaminated pipe or equipment, the heat affected areas will be decontaminated below 10,000 dpm/100 cm2 beta/gamma and 50 dpm/100 cm2 alpha removable contamination prior to welding. Fixed contamination levels will be documented.

28) ABATEMENT TECHNOLOGY-OPENING OF PITS &/OR RISERS TO ACCESS A TANK-Ground Covers
Prior to opening pits and/or risers to access a tank or perform other activities, ground covers will be installed around the riser or pit.

29) ABATEMENT TECHNOLOGY-OPENING OF PITS &/OR RISERS TO ACCESS A TANK-Splash Guards
Splash guards will be installed around a pit if planned activities will involve use of water spray to facilitate decontamination of equipment being removed from the pit or needed to buffer areas of high contamination within the pit from the general work area.

30) ABATEMENT TECHNOLOGY-OPENING OF PITS &/OR RISERS TO ACCESS A TANK- Laydown Area
If a laydown area will be utilized, it will be established and provided with ground cover and splash guard. A layer of matting will be used to protect the ground cover.

31) ABATEMENT TECHNOLOGY-OPENING OF PITS &/OR RISERS TO ACCESS A TANK-Decontamination & Fixative
In-pit decontamination and/or application of fixative will be performed when required by the General Abatement Technology conditions #9.

32) ABATEMENT TECHNOLOGY-OPENING OF PITS &/OR RISERS TO ACCESS A TANK-Risers Controls
During activities that require tank access via a riser the following additional controls will be implemented;
-Minimize open riser time by use of valves, caps, or plugs
-Perform decontamination of equipment being removed from the tank within the riser or as close to the top of the riser as practical

-Use appropriate containment per the latest version of the applicable radiological containment guide

33) ABATEMENT TECHNOLOGY-OPENING OF PITS &/OR RISERS TO ACCESS A TANK-Ventilation & Containment Controls
During pit/tank access where other active ventilation is not available or judged inadequate and full containment is not practical, the above controls may be supplemented with the following;
-Use of an open top bull pen provided with a licensed ventilation system that exhausts external to the bull pen to control airborne levels in the bull pen work space and mitigate the diffuse and fugitive emissions
-Within an open top bull pen actively ventilated by a licensed ventilation system, small (<200 CFM) vacuums fitted with HEPA-type filters exhausting within the bull pen may be used to vacuum contaminants, collapse glove bags or provide point source contamination control

34) ABATEMENT TECHNOLOGY-AIR MOVERS FOR ENVIRONMENTAL CONDITIONS-Personnel Exposure
When air movers or fans are used to mitigate personnel exposure to environmental conditions and not for radiological control the following control, the velocity of the air movement caused by the air mover in areas of contamination will not exceed 25 mph, based on maximum design capacity.

Emission Unit ID: 1420

200E

Unplanned Radioactive Contamination Cleanup @ WTP

This is a MINOR, FUGITIVE, non-point source emission unit.

WTP Diffuse and Fugitive

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
None	None		

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075 [3]		As listed in condition 3 of this emission unit.	As listed in condition 5 of this emission unit.

Sampling Requirements As listed in the following Conditions and Limitations.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Diffuse and fugitive emission unit for as-needed cleanup of radioactively-contaminated debris.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Cleanup of unplanned radioactive contamination at the Waste Treatment and Immobilization Plant	AIR 15-213	3/2/2015	947

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.03E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 6.03E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) The processs for this activity includes cleanup of radioactively-contaminated debris if found during routine radiological surveys. Action levels for implementation of this NOC include levels greater than or equal to 1000 dpm/100 cm2 beta-gamma or 20 dpm/100 cm2 alpha removable contamination. If action levels are equal to or greater than these limits, cleanup is necessary and implementation of the NOC will commence.

When this NOC is implemented, the following cleanup techniques will be used:

1.Non-coated concrete surfaces
a)Dry Rags
b)Scraping devices
c)Scrub brushes
d)Strippable coating
e)Wire brushes
f) High Efficiency Particulate Air (HEPA) vacuums

2.All other surfaces
a)Scraping devices
b)Damp wiping
c)Scrub brushes
d)Spray bottles with cleaning compound
e)Strippable coating

f)Wire brushes
a)High Efficiency Particulate Air (HEPA) vacuums
3.Soils and soil like surfaces with debris
a)Trowel/shovel
b)Scraping devices
c) Binding compounds

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	4.55E-03	B/G - 0	5.81E-03
Alpha is assumed to be all Am-241. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.		Beta/Gamma is assumed to be all Sr-90. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.	

4) ADMINISTRATIVE CONTROLS

The following Administrative emission controls will be used during cleanup activities:
1.Strippable coatings or coverings may be applied to stabilize contamination.
2.Alpha and beta-gamma contamination surveys will be performed prior to and during cleanup activities. Glovebags or containments will be used when aggressive decontamination methods are implemented.
3.If HEPA vacuums are used, their operation will be conducted consistent with the Hanford Site W-PORTEX 007 HEPA Vacuum License (WDOH 2006) EU 1420
4.Liquids and damp wiping will be allowed on concrete to prevent transferring radionuclides into the building material; however, this technique may be used on coated floors and ducting. Glovebags or containments will be used for decontamination at levels greater than or equal to 1,000 dpm/100 cm2 alpha or 50,000 dpm/100 cm2 beta-gamma for removable contamination.
5.Removable contamination will be maintained less than 2,000 dpm/100cm2 alpha or less than 50,000 dpm/100cm2 beta-gamma on building and surfaces.
6. Contaminated debris will be collected and packaged in containers for disposal at an approved disposal facility. Radiological contamination and dose rate monitoring are conducted prior to transporting waste containers. Waste containers are managed consistent with applicable regulatory requirements.

5) MONITORING

Radiological monitoring will be performed in accordance with the latest revisions of the Waste Treatment Plant Radiological Control Manual (24590-WTP-MN-ESH-01-001), and the Radiological Routines procedure (24590-WTP-GPP-SRAD-021). Routine contamination surveys of contaminated areas will occur.
The following records and documentation will be kept.
•Radiological survey records and documentation will be kept.
•HEPA vacuum log, as needed
•Waste container log
Periodic air samples will be taken from the demolition area(s) of the area(s) with the highest potential exposure from the decontamination effort.

Emission Unit ID: 1425

200E

Diffuse and Fugitive Operations at LERF and ETF

This is a MINOR, FUGITIVE, non-point source emission unit.

Liquid Effluent Retention Facility (LERF)

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114(3)	Each radionuclide that could contribute 10 percent or greater to the potential-to-emit TEDE	Per the sitewide ambient air monitoring program

Sampling Requirements Per the sitewide ambient air monitoring program and section 5.0 of the FF-01 license samples will be collected from the existing near-facility and far-field monitoring stations.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Diffuse and Fugitive operations at LERF and ETF (Replaces NOC 1000)	AIR 17-134	1/24/2017	1082

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.96E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) PROCESS DESCRIPTION
This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The operation of the Liquid Effluent Retention Facility/200 Area Effluent Treatment Facility (LERF/ETF), which includes the load-in station and load-in station filter skid.

To initiate acceptance of a new wastewater into LERF/ETF, the generator is required to complete and certify a Waste Profile Sheet (WPS) with the supporting analytical data and documentation attached. Based on the WPS, a waste acceptability review is conducted to assess the waste characterization data against the facility waste acceptance criteria as derived from environmental, safety, and operational requirements. The NOC approval conditions are specifically considered in this review process.

Once the WPS has been certified by the generator and approved by the LERF/ETF representative, the wastewater transfer can be scheduled. Incoming wastewater can be added directly to the ETF process or received at LERF or the load in station. LERF can receive wastewaters via underground pipelines from generator facilities, via pipeline from the load in station, or directly through a series of access ports located at each basin. The load in station accommodates wastewater receipt via container (e.g., drums, carboys, and tankers).

LERF Operations

LERF provides temporary storage, as well as flow and pH equalization, for wastewaters prior to treatment at ETF. LERF consists of three high density polyethylene double lined basins, each with an operating capacity of 29.5 million L. Each basin has a leachate collection system located between the primary and secondary composite liner systems and is also equipped with a floating low density polyethylene cover firmly attached to the sidewalls to prevent unwanted material from entering the basins and avoid evaporation of wastewater. To prevent the buildup of gas, each basin is passively vented through vent pipes. Gases exiting through a vent pipe are channeled through a carbon adsorption filter.

Load-in Station Operations
The load in station consists of two unloading bays for liquid waste transfers. The first bay has two load in tanks, a sump, transfer pumps, a skid mounted filtration system, level instrumentation for tanker trucks, underground transfer lines that allow transfers to either LERF or ETF, and leak detection capabilities for the containment basin and transfer lines. The second bay consists of two pumps that will unload a tanker, a filter skid to remove excess solids, and a 24,500 L holding tank. The holding tank is emptied using the pumping system associated with the other unloading bay. Containerized wastewaters received at the load in station are typically routed through the filter skid. When solids buildup causes differential pressure across a filter housing to become excessive, the filter elements are replaced. The filtration system is shut down, the system is vented to atmosphere by opening a quick release vent cap on top of each filter housing, and solution in the housing is drained to the load in station sump. The housing is then opened, and the spent filter elements are placed in a disposal container. After filter change out, the sump is emptied to the load in station, LERF, or ETF. The capability to filter sump discharges is also provided at the load in station. Small shipments that cannot be pumped directly into the filter skid are first drained into the sump, then pumped through the filter skid using the sump pump.

Wastewater tanker inspection, pressure testing, and repair are also conducted at the load in station as needed to meet annual U.S. Department of Transportation certification requirements. Tankers, which may contain a wastewater heel, are pressurized with compressed air, leak checked at 80 percent of service pressure, and integrity tested at 150 percent of service pressure. After the test is complete, the compressed air is gradually vented from the tanker to the atmosphere. Minor repairs (e.g., seal replacement) are performed, as needed, for successful completion of the certification test.

LERF Cover Cleanup Operations
These operations include removal of contaminated liquids, vegetation, debris, and windblown dirt/mud that have collected on the surface of the LERF basin covers and in nearby external locations in or near LERF. Precipitation and windblown dirt/mud, which normally collect on the floating low-density polyethylene covers, are removed by pumping the precipitation into the basin under the cover, into containers located at LERF, or directly to the ground if contamination is below the groundwater quality criteria for radionuclides listed in WAC 173-200-040, “Water Quality Standards for Groundwaters of the State of Washington,” “Criteria.” The dirt/mud on the covers is collected on filters, sluiced, slurried, or mechanically loaded into containers for disposal.

Vegetation and debris (such as old hoses and failed pumps) are removed using mechanical methods and tools including, but not limited to, cranes, heavy equipment, chain balls, nets, long reach tools, or similar methods. Workers will employ these methods from the sides of the basins. This material will be placed in containers and disposed.

The floating covers and charcoal filters on breather vents reduce emissions from the LERF basins. Other unfiltered LERF/ETF diffuse and fugitive emissions are very low. Containment provided by drums and other waste packages, combined with minimization of any external contamination in accordance with established radiation control procedures, provides for effective control of potential fugitive emissions. Potential emissions during waste unloading from tankers and pressure testing of tankers are controlled by the very moist conditions in the tanker and the gradual air displacement and air release rates that occur.

LERF Cover Repair and Replacement
Basin covers may be repaired or replaced as needed.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.96E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	5.01E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate is assumed to be Pu-239/240. The release rate assumes two full basins and the addition of waste water equivalent to ETF's annual operating capacity. In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

Am - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

B/G - 0	3.33E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate is assumed to be Sr-90/Cs-137. The release rate assumes two full basins and the addition of waste water equivalent to ETF's annual operating capacity. In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

C - 14		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 144		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 244		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 154		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 155		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

H - 3		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 129		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

K - 40		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 54		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 22		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 94		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 237		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 239/240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.

Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents greater than 10% of the unabated PTE and represents greater than 25% of the abated dose.

Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Ce - 144	Cm - 244	Co - 60
Cs - 134	Cs - 137	Eu - 154	Eu - 155	H - 3
I - 129	K - 40	Mn - 54	Na - 22	Nb - 94
Np - 237	Pu - 238	Pu - 239/240	Pu - 241	Ra - 226
Ru - 106	Sb - 125	Se - 79	Sr - 90	Tc - 99
U - 233	U - 234	U - 235	U - 236	U - 238
Zn - 65	Zr - 95			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) CONTAMINATION CONTROL - Diffuse and Fugitive Activities
The 200 Area Diffuse/Fugitive Emission Unit at LERF/ETF is limited to the following:
•LERF wastewater receipt via pipeline and LERF access ports
•Minor leaks during transfers when using vented pipelines
•LERF operations and maintenance
•LERF leachate collection system sampling and sump pumping
•Load-in station wastewater receipts via container
•Load-in station filter skid operation and maintenance
•Load-in station tank operation, maintenance, and repair
•Minor leaks and spills to secondary containment systems
•Storage and transfer of treated effluent containing tritium
•Effluent sampling
•Purge water open-top settling tank operation
•Removal of contaminated liquids, plants, debris, and dirt/mud that have collected on the surface of the LERF covers and in nearby external locations in or near LERF
•Cover repair and replacement
(WAC 246-247-040(5))

5) CONTINUOUS MONITORING - Ambient Air Monitoring Network
The 200 Area near-facility ambient air monitoring network shall be used for continuous monitoring. Stations N498, N499, N582, N972, and N999 will provide indication of potential elevated airborne radioactivity.
(WAC 246-247-040(5))

6) CONTAMINATION CONTROL - Cover Cleanup
If physical removal from the covers other than by pumping is necessary, the following controls shall be implemented:
•Continuous radiological control technician coverage shall be provided as specified in applicable Radiological Work Permits.
•Beta-gamma contamination surveys shall be performed during cleanup activities.
•Cleanup activities involving movement of dispersible contaminated material will stop if average wind speeds exceed 20 miles per hour, as measured at the work site.
•Suppressants such as water, fixatives, and covers will be used, as necessary, to control contamination spread.
(WAC 246-247-040(5))

7) WDOH NOTIFICATION - High Contamination Area Initiated
WDOH will be notified if removable contamination above 100,000 disintegrations per minute per 100 square centimeters beta-gamma are encountered outside the LERF contamination boundary.
(WAC 246-247-040(5), WAC 246-247-040(6))

8) WDOH NOTIFICATION - Contamination Greater than 1 rad/hr
WDOH shall be notified when direct contamination readings are detected greater than 1 rad per hour per 100 square centimeters beta-gamma during cleanup activities.
(WAC 246-247-040(5), WAC 246-247-040(6))

9) WDOH NOTIFICATION - Increased Controls
Removable and transferable contamination shall be maintained less than 4 rad per hour per 100 square centimeters beta-gamma. Exceeding these contamination levels requires notification to WDOH and implementation of the following additional controls:
-Soil will be wetted prior to removal if not already damp.
-General work place air monitoring will be performed during removal activities.

-Dislodged vegetation not already in containers will have fixative applied at the end of each shift, or the material will be covered, as necessary, to prevent airborne contamination.
(WAC 246-247-040(5), WAC 246-247-040(6))

10) MONITORING - Periodic Confirmatory Monitoring
Periodic Confirmatory Monitoring of the LERF and ETF diffuse and fugitive emissions is made using the Hanford Site near facility environmental monitoring program.
(WAC 246-247-040(5))

Emission Unit ID: 1426

200E

WESF Hot Cells F & G & Containment Enclosures

This is a MINOR, ACTIVELY ventilated emission unit.

Waste Encapsulation and Storage Facility (WESF)

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Filter	1	Type-1

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Cs-137, Sr-90	When used, daily smears and fixed head sampler.

Sampling Requirements Actual emissions reporting will utilize nondestructive assay, record sampler, smears of the exhaust port or continuous air monitoring, whichever is more appropriate.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Waste Encapsulation and Storage Facility (WESF) Ventilation Upgrade	AIR 16-302	2/22/2016	1004

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.58E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The K1 abatement system ventilates the pool cells, truck port, service gallery, hot manipulator shop and operating gallery portion of the WESF facility. The K3 abatement system will ventilate the Hot Cells A through G, the Canyon, and Tank TK-100 up to the start of the ventilation changeover activities. The K3N abatement system will ventilate the Canyon, Tank TK-100, Hot Cell G and Hot Cells A through F during the stabilization process. Once the stabilization activities have been completed, the K3N abatement system will ventilate the Canyon, Tank TK-100, and Hot Cell G. The paired combination of the K1 and K3 or the K1 and K3N abatement systems exhaust through a common stack that is continuously sampled when the abatement systems are in operation. The historic activities with the exception of capsule storage as detailed in previous NOCAs are no longer conducted at the WESF Facility and the new activities described below will be conducted for stabilization activities. After stabilization activities have been completed, routine operations and surveillance activities will continue for those portions of the facility associated with the storage and management of the capsules.

A.Construction and demolition of WESF infrastructure necessary for the installation and tie in of the K3N HEPA filtered abatement system. The K3 HEPA filtered abatement system is being isolated and replaced by an above ground K3N HEPA filtered abatement system to permit stabilization activities to occur.
B.Stabilization (grouting) of the Hot Cells F and the hot pipe trench.
C.Use of portable HEPA filtered exhausters and contamination control structures during construction and stabilization activities exterior and interior to the WESF.
Activities a and b may emit radioactive air through 296-B-10 common stack. Additionally, activities a through c may emit to the 200 Areas Diffuse & Fugitive emission unit.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.58E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Cs - 137	6.50E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Sr - 90	4.80E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Cs - 137 Sr - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) MONITORING- Smears
At least daily when workers are present, smears will be taken at the discharge point of the HEPA filtered exhauster. If removable contamination above 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, work will cease until the source of the downstream contamination is investigated and corrected. WDOH will be notified upon discovery of contamination. WAC 246-247-060(5)

5) MONITORING- Ductwork
Ductwork, seams, and potential release locations on the portable exhausters used outside of the WESF confinement ventilation boundary (K1 & K3) are to be monitored on a routine basis for potential radionuclide releases and results noted on the log sheets (e.g., post survey results negative). These routine checks should be kept as retrievable records for each portable exhauster being used. WAC 246-247-060 (5)

6) MONITORING- Periodic Confirmatory Measurements (PCM)
If a containment structure is used, periodic confirmatory measurements (PCM) of emissions shall be performed and shall consist of the radiological surveys or CAM records. Compliance shall be demonstrated by showing that actual emissions obtained from fixed head sampling or back calculated from NDA results are inherently less than the estimated emissions, which are based and calculated from the same contamination levels (WAC 246-247-040(5)).

7) ABATEMENT TECHNOLOGY- HEPA Filtered Vacuum
When a HEPA Filtered Vacuum Radioactive Air Emission Unit (HEPA VAC) is used, the conditions, controls, monitoring requirements and limitations of the latest approved revision of the HEPA VAC Notice of Construction shall be required WAC 246-247-060(5) WAC 246 247 080(7)

8) REPORT OF CLOSURE- License
Upon completion of the W-130 project, removal of this license from active use will occur upon written notification to Department of Health. WAC 246-247-080(6)

Emission Unit ID: 1427

200E

WESF Hot Cell A

This is a MAJOR, ACTIVELY ventilated emission unit.

Waste Encapsulation and Storage Facility (WESF)

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Filter	1	Type 1

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Cs-137, Sr-90	When used, daily smears and fixed head sampler.

Sampling Requirements Actual emissions reporting will utilize nondestructive assay, record sampler, smears of the exhaust port or continuous air monitoring, whichever is more appropriate.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Waste Encapulation and Storage Facility (WESF) Ventilation Upgrade	AIR 16-303	2/22/2016	1005

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.19E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The K1 abatement system ventilates the pool cells, truck port, service gallery, hot manipulator shop and operating gallery portion of the WESF facility. The K3 abatement system will ventilate the Hot Cells A through G, the Canyon, and Tank TK-100 up to the start of the ventilation changeover activities. The K3N abatement system will ventilate the Canyon, Tank TK-100, Hot Cell G and Hot Cells A through F during the stabilization process. Once the stabilization activities have been completed, the K3N abatement system will ventilate the Canyon, Tank TK-100, and Hot Cell G. The paired combination of the K1 and K3 or the K1 and K3N abatement systems exhaust through a common stack that is continuously sampled when the abatement systems are in operation. The historic activities with the exception of capsule storage as detailed in previous NOCAs are no longer conducted at the WESF Facility and the new activities described below will be conducted for stabilization activities. After stabilization activities have been completed, routine operations and surveillance activities will continue for those portions of the facility associated with the storage and management of the capsules.

A.Construction and demolition of WESF infrastructure necessary for the installation and tie-in of the K3N HEPA filtered abatement system. The K3 HEPA filtered abatement system is being isolated and replaced by an above ground K3N HEPA filtered abatement system to permit stabilization activities to occur.
B.Stabilization (grouting) of the K3 Filter Pit and filter housings, K3 Duct and trench, Hot Cells A through F, A Cell Airlock and the hot pipe trench.
C.Use of portable HEPA filtered exhausters and contamination control structures during construction and stabilization activities exterior and interior to the WESF.

Activities a and b may emit radioactive air through 296-B-10 common stack. Additionally, activities a through

b may emit to the 200 Areas Diffuse & Fugitive emission unit.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.19E-01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Cs - 137	7.32E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Sr - 90	5.90E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Cs - 137 Sr - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) MONITORING- Smears
At least daily when workers are present, smears will be taken at the discharge point of the HEPA filtered exhauster. If removable contamination above 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, work will cease until the source of the downstream contamination is investigated and corrected. WDOH will be notified upon discovery of contamination. WAC 246-247-060(5)

5) MONITORING- Ductwork
Ductwork, seams, and potential release locations on the portable exhausters used outside of the WESF confinement ventilation boundary (K1 & K3) are to be monitored on a routine basis for potential radionuclide releases and results noted on the log sheets (e.g., post survey results negative). These routine checks should be kept as retrievable records for each portable exhauster being used. WAC 246-247-060(5)

6) MONITORING- Periodic Confirmatory Measurements (PCM)
If a containment structure is used, periodic confirmatory measurements (PCM) of emissions shall be performed and shall consist of the radiological surveys or CAM records. Compliance shall be demonstrated by showing that actual emissions obtained from fixed head sampling or back calculated from NDA results are inherently less than the estimated emissions, which are based and calculated from the same contamination levels WAC 246-247-060(5)

7) ABATEMENT TECHNOLOGIES- HEPA Filtered Vacuum
When a HEPA Filtered Vacuum Radioactive Air Emission Unit (HEPA VAC) is used, the conditions, controls, monitoring requirements and limitations of the latest approved revision of the HEPA VAC Notice of Construction shall be required (WAC 246-247-060(5)) (WAC 246 247 080(7)).

8) REPORT OF CLOSURE- License
Upon completion of the W-130 project, removal of this license from active use will occur upon written notification to Department of Health. WAC 246-247-080(6)

Emission Unit ID: 1428

200E

WESF Hot Cell B

This is a MAJOR, ACTIVELY ventilated emission unit.

Waste Encapsulation and Storage Facility (WESF)

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Filter	1	Type-1

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Cs-137, Sr-90	When used, daily smears and fixed head sampler.

Sampling Requirements Actual emissions reporting will utilize nondestructive assay, record sampler, smears of the exhaust port or continuous air monitoring, whichever is more appropriate.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Waste Encapsulation and Storage Facility (WESF) Ventilation Upgrade	AIR 16-304	2/22/2016	1006

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.70E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The K1 abatement system ventilates the pool cells, truck port, service gallery, hot manipulator shop and operating gallery portion of the WESF facility. The K3 abatement system will ventilate the Hot Cells A through G, the Canyon, and Tank TK-100 up to the start of the ventilation changeover activities. The K3N abatement system will ventilate the Canyon, Tank TK-100, Hot Cell G and Hot Cells A through F during the stabilization process. Once the stabilization activities have been completed, the K3N abatement system will ventilate the Canyon, Tank TK-100, and Hot Cell G. The paired combination of the K1 and K3 or the K1 and K3N abatement systems exhaust through a common stack that is continuously sampled when the abatement systems are in operation. The historic activities with the exception of capsule storage as detailed in previous NOCAs are no longer conducted at the WESF Facility and the new activities described below will be conducted for stabilization activities. After stabilization activities have been completed, routine operations and surveillance activities will continue for those portions of the facility associated with the storage and management of the capsules.

A.Construction and demolition of WESF infrastructure necessary for the installation and tie-in of the K3N HEPA filtered abatement system. The K3 HEPA filtered abatement system is being isolated and replaced by an above ground K3N HEPA filtered abatement system to permit stabilization activities to occur.
B.Stabilization (grouting) of the K3 Filter Pit and filter housings, K3 Duct and trench, Hot Cells A through F, A Cell Airlock and the hot pipe trench.
C.Use of portable HEPA filtered exhausters and contamination control structures during construction and stabilization activities exterior and interior to the WESF.

Activities a and b may emit radioactive air through 296-B-10 common stack. Additionally, activities a through

b may emit to the 200 Areas Diffuse & Fugitive emission unit.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.70E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Cs - 137	3.20E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Sr - 90	2.32E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Cs - 137 Sr - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) MONITORING- Smears
At least daily when workers are present, smears will be taken at the discharge point of the HEPA filtered exhauster. If removable contamination above 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, work will cease until the source of the downstream contamination is investigated and corrected. WDOH will be notified upon discovery of contamination. WAC 246-247-060(5)

5) MONITORING- Ductwork
Ductwork, seams, and potential release locations on the portable exhausters used outside of the WESF confinement ventilation boundary (K1 & K3) are to be monitored on a routine basis for potential radionuclide releases and results noted on the log sheets (e.g., post survey results negative). These routine checks should be kept as retrievable records for each portable exhauster being used. WAC 246-247-060(5)

6) ABATEMENT TECHNOLOGY- HEPA Filtered Vacuum
If a containment structure is used, periodic confirmatory measurements (PCM) of emissions shall be performed and shall consist of the radiological surveys or CAM records. Compliance shall be demonstrated by showing that actual emissions obtained from fixed head sampling or back calculated from NDA results are inherently less than the estimated emissions, which are based and calculated from the same contamination levels WAC 246-247-060(5) WAC 246-247-080(7)

7) When a HEPA Filtered Vacuum Radioactive Air Emission Unit (HEPA VAC) is used, the conditions, controls, monitoring requirements and limitations of the latest approved revision of the HEPA VAC Notice of Construction shall be required (WAC 246-247-060(5)) (WAC 246 247 080(7)).

8) REPORT OF CLOSURE- License
Upon completion of the W-130 project, removal of this license from active use will occur upon written notification to Department of Health. WAC 246-247-080(6)

Emission Unit ID: 1429

200E

WESF Hot Cell C

This is a MAJOR, ACTIVELY ventilated emission unit.

Waste Encapsulation and Storage Facility (WESF)

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Filter	1	Type-1

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Cs-137, Sr-90	When used, daily smears and fixed head sampler.

Sampling Requirements Actual emissions reporting will utilize nondestructive assay, record sampler, smears of the exhaust port or continuous air monitoring, whichever is more appropriate.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Waste Encapsulation and Storage Facility (WESF) Ventilation Upgrade	AIR 16-305	2/22/2016	1007

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.34E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The K1 abatement system ventilates the pool cells, truck port, service gallery, hot manipulator shop and operating gallery portion of the WESF facility. The K3 abatement system will ventilate the Hot Cells A through G, the Canyon, and Tank TK-100 up to the start of the ventilation changeover activities. The K3N abatement system will ventilate the Canyon, Tank TK-100, Hot Cell G and Hot Cells A through F during the stabilization process. Once the stabilization activities have been completed, the K3N abatement system will ventilate the Canyon, Tank TK-100, and Hot Cell G. The paired combination of the K1 and K3 or the K1 and K3N abatement systems exhaust through a common stack that is continuously sampled when the abatement systems are in operation. The historic activities with the exception of capsule storage as detailed in previous NOCAs are no longer conducted at the WESF Facility and the new activities described below will be conducted for stabilization activities. After stabilization activities have been completed, routine operations and surveillance activities will continue for those portions of the facility associated with the storage and management of the capsules.

A.Construction and demolition of WESF infrastructure necessary for the installation and tie-in of the K3N HEPA filtered abatement system. The K3 HEPA filtered abatement system is being isolated and replaced by an above ground K3N HEPA filtered abatement system to permit stabilization activities to occur.
B.Stabilization (grouting) of the K3 Filter Pit and filter housings, K3 Duct and trench, Hot Cells A through F, A Cell Airlock and the hot pipe trench.
C.Use of portable HEPA filtered exhausters and contamination control structures during construction and stabilization activities exterior and interior to the WESF.

Activities a and b may emit radioactive air through 296-B-10 common stack. Additionally, activities a through

b may emit to the 200 Areas Diffuse & Fugitive emission unit.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.34E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Cs - 137	3.20E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Sr - 90	1.60E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Cs - 137 Sr - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) MONITORING- Smears
At least daily when workers are present, smears will be taken at the discharge point of the HEPA filtered exhauster. If removable contamination above 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, work will cease until the source of the downstream contamination is investigated and corrected. WDOH will be notified upon discovery of contamination. WAC 246-247-060(5)

5) MONITORING- Ductwork
Ductwork, seams, and potential release locations on the portable exhausters used outside of the WESF confinement ventilation boundary (K1 & K3) are to be monitored on a routine basis for potential radionuclide releases and results noted on the log sheets (e.g., post survey results negative). These routine checks should be kept as retrievable records for each portable exhauster being used. WAC 246-247-060(5)

6) MONITORING- Periodic Confirmatory Measurement (PCM)
If a containment structure is used, periodic confirmatory measurements (PCM) of emissions shall be performed and shall consist of the radiological surveys or CAM records. Compliance shall be demonstrated by showing that actual emissions obtained from fixed head sampling or back calculated from NDA results are inherently less than the estimated emissions, which are based and calculated from the same contamination levels (WAC 246-247-060(5)

7) ABATEMENT TECHNOLOGY- HEPA Filtered Vacuum
When a HEPA Filtered Vacuum Radioactive Air Emission Unit (HEPA VAC) is used, the conditions, controls, monitoring requirements and limitations of the latest approved revision of the HEPA VAC Notice of Construction shall be required. WAC 246-247-060(5) WAC 246 247 080(7)

8) REPORT OF CLOSURE- License
Upon completion of the W-130 project, removal of this license from active use will occur upon written notification to Department of Health. WAC 246-247-080(6)

Emission Unit ID: 1430

200E

WESF Hot Cell D & E

This is a MAJOR, ACTIVELY ventilated emission unit.

Waste Encapsulation and Storage Facility (WESF)

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Filter	1	Type-1

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Cs-137, Sr-90	When used, daily smears and fixed head sampler.

Sampling Requirements Actual emissions reporting will utilize nondestructive assay, record sampler, smears of the exhaust port or continuous air monitoring, whichever is more appropriate.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Waste Encapsulation and Storage Facility (WESF) Upgrade	AIR 16-306	2/22/2016	1008

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.59E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The K1 abatement system ventilates the pool cells, truck port, service gallery, hot manipulator shop and operating gallery portion of the WESF facility. The K3 abatement system will ventilate the Hot Cells A through G, the Canyon, and Tank TK-100 up to the start of the ventilation changeover activities. The K3N abatement system will ventilate the Canyon, Tank TK-100, Hot Cell G and Hot Cells A through F during the stabilization process. Once the stabilization activities have been completed, the K3N abatement system will ventilate the Canyon, Tank TK-100, and Hot Cell G. The paired combination of the K1 and K3 or the K1 and K3N abatement systems exhaust through a common stack that is continuously sampled when the abatement systems are in operation. The historic activities with the exception of capsule storage as detailed in previous NOCAs are no longer conducted at the WESF Facility and the new activities described below will be conducted for stabilization activities. After stabilization activities have been completed, routine operations and surveillance activities will continue for those portions of the facility associated with the storage and management of the capsules.

A.Construction and demolition of WESF infrastructure necessary for the installation and tie-in of the K3N HEPA filtered abatement system. The K3 HEPA filtered abatement system is being isolated and replaced by an above ground K3N HEPA filtered abatement system to permit stabilization activities to occur.
B.Stabilization (grouting) of the K3 Filter Pit and filter housings, K3 Duct and trench, Hot Cells A through F, A Cell Airlock and the hot pipe trench.
C.Use of portable HEPA filtered exhausters and contamination control structures during construction and stabilization activities exterior and interior to the WESF.

Activities a and b may emit radioactive air through 296-B-10 common stack. Additionally, activities a through

b may emit to the 200 Areas Diffuse & Fugitive emission unit.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.59E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Cs - 137	4.80E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Sr - 90	3.20E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Cs - 137 Sr - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) MONITORING- Continuous Air Monitor (CAM)
A CAM will be used for continuous monitoring whenever this emission unit is in operation. WAC 246-247-060(5)

5) MONITORING- Smears
At least daily when workers are present, smears will be taken at the discharge point of the HEPA filtered exhauster. If removable contamination above 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, work will cease until the source of the downstream contamination is investigated and corrected. WDOH will be notified upon discovery of contamination. WAC 246-247-060(5)

6) MONITORING- Ductwork
Ductwork, seams, and potential release locations on the portable exhausters used outside of the WESF confinement ventilation boundary (K1 & K3) are to be monitored on a routine basis for potential radionuclide releases and results noted on the log sheets (e.g., post survey results negative). These routine checks should be kept as retrievable records for each portable exhauster being used WAC 246-247-060(5)

7) MONITORING- Periodic Confirmatory Measurement (PCM)
If a containment structure is used, periodic confirmatory measurements (PCM) of emissions shall be performed and shall consist of the radiological surveys or CAM records. Compliance shall be demonstrated by showing that actual emissions obtained from fixed head sampling or back calculated from NDA results are inherently less than the estimated emissions, which are based and calculated from the same contamination levels WAC 246-247-060(5)

8) ABATEMENT TECHNOLOGIES
When a HEPA Filtered Vacuum Radioactive Air Emission Unit (HEPA VAC) is used, the conditions, controls, monitoring requirements and limitations of the latest approved revision of the HEPA VAC Notice of Construction shall be required WAC 246-247-060(5) WAC 246 247 080(7)

9) REPORT OF CLOSURE- License
Upon completion of the W-130 project, removal of this license from active use will occur upon written notification to Department of Health. WAC 246-247-080(6)

Emission Unit ID: 1431

200E

WESF K3N & containment enclosures

This is a MAJOR, ACTIVELY ventilated emission unit.

Waste Encapsulation and Storage Facility (WESF)

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Filter	1	Type-1

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Cs-137, Sr-90	When used, daily smears and fixed head sampler.

Sampling Requirements Actual emissions reporting will utilize nondestructive assay, record sampler, smears of the exhaust port or continuous air monitoring, whichever is more appropriate.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Waste Encapsulation and Storage Facility (WESF) Ventilation Upgrade	AIR 16-307	2/22/2016	1009

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.36E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The K1 abatement system ventilates the pool cells, truck port, service gallery, hot manipulator shop and operating gallery portion of the WESF facility. The K3 abatement system will ventilate the Hot Cells A through G, the Canyon, and Tank TK-100 up to the start of the ventilation changeover activities. The K3N abatement system will ventilate the Canyon, Tank TK-100, Hot Cell G and Hot Cells A through F during the stabilization process. Once the stabilization activities have been completed, the K3N abatement system will ventilate the Canyon, Tank TK-100, and Hot Cell G. The paired combination of the K1 and K3 or the K1 and K3N abatement systems exhaust through a common stack that is continuously sampled when the abatement systems are in operation. The historic activities with the exception of capsule storage as detailed in previous NOCAs are no longer conducted at the WESF Facility and the new activities described below will be conducted for stabilization activities. After stabilization activities have been completed, routine operations and surveillance activities will continue for those portions of the facility associated with the storage and management of the capsules.

   A.Construction and demolition of WESF infrastructure necessary for the installation and tie-in of the K3N HEPA filtered abatement system. The K3 HEPA filtered abatement system is being isolated and replaced by an above ground K3N HEPA filtered abatement system to permit stabilization activities to occur. Activities may emit to the 200 Areas Diffuse & Fugitive emission unit.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 2.36E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Cs - 137	5.59E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Sr - 90	9.46E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Cs - 137 Sr - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) MONITORING- Smears
At least daily when workers are present, smears will be taken at the discharge point of the HEPA filtered exhauster. If removable contamination above 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, work will cease until the source of the downstream contamination is investigated and corrected. WDOH will be notified upon discovery of contamination. WAC 246-247-060(5)

5) MONITORING- Ductwork
Ductwork, seams, and potential release locations on the portable exhausters used outside of the WESF confinement ventilation boundary (K1 & K3) are to be monitored on a routine basis for potential radionuclide releases and results noted on the log sheets (e.g., post survey results negative). These routine checks should be kept as retrievable records for each portable exhauster being used. WAC 246-247-060(5)

6) MONITORING- Periodic Confirmatory Measurement (PCM)
If a containment structure is used, periodic confirmatory measurements (PCM) of emissions shall be performed and shall consist of the radiological surveys or CAM records. Compliance shall be demonstrated by showing that actual emissions obtained from fixed head sampling or back calculated from NDA results are inherently less than the estimated emissions, which are based and calculated from the same contamination levels (WAC 246-247-060(5)

7) ABATEMENT TECHNOLOGIES- HEPA Filtered vacuum
When a HEPA Filtered Vacuum Radioactive Air Emission Unit (HEPA VAC) is used, the conditions, controls, monitoring requirements and limitations of the latest approved revision of the HEPA VAC Notice of Construction shall be required WAC 246-247-060(5) WAC 246 247 080(7)

8) REPORT OF CLOSURE- License
Upon completion of the W-130 project, removal of this license from active use will occur upon written notification to Department of Health. WAC 246-247-080(6)

9) MONITORING-Continuous Air Monitor (CAM)
A CAM will be used for continuous monitoring whenever this emission unit is in operation. WAC 246-247-060(5)

Emission Unit ID: 1432

200E

WESF K3 filter pit containment enclosures

This is a MAJOR, ACTIVELY ventilated emission unit.

Waste Encapsulation and Storage Facility (WESF)

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Filter	1	Type-1

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Cs-137, Sr-90	When used, daily smears and fixed head sampler.

Sampling Requirements Actual emissions reporting will utilize nondestructive assay, record sampler, smears of the exhaust port or continuous air monitoring, whichever is more appropriate.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Waste Encapsulation and Storage Facility (WESF) Ventilation Upgrade	AIR 16-308	2/22/2106	1011

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.36E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The K1 abatement system ventilates the pool cells, truck port, service gallery, hot manipulator shop and operating gallery portion of the WESF facility. The K3 abatement system will ventilate the Hot Cells A through G, the Canyon, and Tank TK-100 up to the start of the ventilation changeover activities. The K3N abatement system will ventilate the Canyon, Tank TK-100, Hot Cell G and Hot Cells A through F during the stabilization process. Once the stabilization activities have been completed, the K3N abatement system will ventilate the Canyon, Tank TK-100, and Hot Cell G. The paired combination of the K1 and K3 or the K1 and K3N abatement systems exhaust through a common stack that is continuously sampled when the abatement systems are in operation. The historic activities with the exception of capsule storage as detailed in previous NOCAs are no longer conducted at the WESF Facility and the new activities described below will be conducted for stabilization activities. After stabilization activities have been completed, routine operations and surveillance activities will continue for those portions of the facility associated with the storage and management of the capsules.

   A.Stabilization (grouting) of the K3 Filter Pit and filter housings.
   Activity may emit to the 200 Areas Diffuse & Fugitive emission unit.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 2.36E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Cs - 137	5.59E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Sr - 90	9.46E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Cs - 137 Sr - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) MONITORING-Continuous Air Monitor (CAM)
A CAM will be used for continuous monitoring whenever this emission unit is in operation. WAC 246-247-060(5)

5) MONITORING- Smears
At least daily when workers are present, smears will be taken at the discharge point of the HEPA filtered exhauster. If removable contamination above 1000 dpm/100cm2 beta/gamma is found downstream of the HEPA filter, work will cease until the source of the downstream contamination is investigated and corrected. WDOH will be notified upon discovery of contamination. WAC 246-247-060(5)

6) MONITORING- Ductwork
Ductwork, seams, and potential release locations on the portable exhausters used outside of the WESF confinement ventilation boundary (K1 & K3) are to be monitored on a routine basis for potential radionuclide releases and results noted on the log sheets (e.g., post survey results negative). These routine checks should be kept as retrievable records for each portable exhauster being used .WAC 246-247-060(5)

7) MONITORING- Periodic Confirmatory Measurement (PCM)
If a containment structure is used, periodic confirmatory measurements (PCM) of emissions shall be performed and shall consist of the radiological surveys or CAM records. Compliance shall be demonstrated by showing that actual emissions obtained from fixed head sampling or back calculated from NDA results are inherently less than the estimated emissions, which are based and calculated from the same contamination levels. WAC 246-247-060(5)

8) ABATEMENT TECHNOLOGIES- HEPA Filtered Vacuum
When a HEPA Filtered Vacuum Radioactive Air Emission Unit (HEPA VAC) is used, the conditions, controls, monitoring requirements and limitations of the latest approved revision of the HEPA VAC Notice of Construction shall be required (WAC 246-247-060(5)) (WAC 246 247 080(7)).

9) REPORT OF CLOSURE- License
Upon completion of the W-130 project, removal of this license from active use will occur upon written notification to Department of Health. WAC 246-247-080(6)

Emission Unit ID: 1440

200W 200 Area Diffuse/Fugitive-TRU Retrieval

200 Area Diffuse/Fugitive-TRU Retrieval

This is a MAJOR, FUGITIVE, non-point source emission unit.

TRU Waste Retrieval

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[2]	40 CFR 61, Appendix B Method 114	Each radionuclide that could contribute greater than 10% of the potential-to-emit TEDE to the MEI, greater than 0.1 mrem/yr potential-to-emit TEDE to the MEI, or greater than 25% of the TEDE to the MEI, after controls.	Per the sitewide ambient monitoring program.

Sampling Requirements Per the sitewide ambient monitoring program, samples will be collected from the existing near-facility monitoring stations.

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
TRU Waste Retrieval Diffuse and Fugitive Operation (Replaces NOC 804)	AIR 16-1226	12/19/2016	1042

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.90E+01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Transuranic waste retrieval involves the processes for removing and dispositioning buried suspect transuranic mixed low-level radioactive waste (hereafter called TRU waste) from Hanford Site burial trenches for storage or disposal at other approved locations. Dispositioning is the orderly administration and handling of waste (including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys.

See the following emission units for a detailed description of additional controls/conditions and limits under this approval:

EU 455 HEPA Vacuums
EU 486 200 Area Diffuse/ Fugitive; Operation of the Transuranic Waste Retrieval Project
EU 755 Mobile Drum Venting System (Active Ventilation) (MDVS)

EU 756 Mobile Drum Venting System (Passive Ventilation) (MDVS)
EU 1181 Categorical Drum Venting System 2 (DVS2)
EU 1322 Portable Enclosure System #1 (PES)
EU 1326 Vapor Extraction System (VES)
EU 1327 Next Generation Retrieval (NGR)

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.90E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	8.30E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for the operation of NGR containment system and portable enclosure system (PES). See Condition Release rates: NRG containment System and portable enclosure system PES.

Alpha - 0	3.80E-05	Solid	WAC 246-247-030(21)(e)

Release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for staging/handling vented containers. See Condition Release rates: Staging of Vented Containers..

Alpha - 0	6.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for installat6ion of Nucfil filters using the Dart System. See condition Release Rates: Dart and Other Venting Systems

Alpha - 0	9.60E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for excavation of soil (contamination detected). See condition: Release Rates: Excavation and Retrieval of Containers.

Alpha - 0	2.00E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate based on Am-241. It is recognized that other radionuclides may be present in very limited quantities. Release rate for excavation of soil (Higher contamination level, controls required). See condition: Release Rates: Excavation and Retrieval of Containers.

Alpha - 0	2.70E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for excavation of soil (notification level). See condition: Release Rates: Excavation and Retrieval of Containers.

B/G - 0	1.60E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for the operation of NGR containment system and portable enclosure system (PES). See Condition Release rates: NRG containment System and portable enclosure system PES.

B/G - 0	9.00E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for installation of Nucfil filters using the Dart System. See condition Release Rates: Dart and Other Venting Systems

B/G - 0	5.70E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Release rate based on Cs-137 + Progeny . It is recognized that other radionuclides may be present in very limited quantities. Release rate for staging/handling vented containers. See Condition Release rates: Staging of Vented Containers..

B/G - 0	6.60E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for excavation of soil (contamination detected). See condition: Release Rates: Excavation and Retrieval of Containers.

B/G - 0	1.30E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for excavation of soil (Higher contamination level, controls required). See condition: Release Rates: Excavation and Retrieval of Containers.

B/G - 0	6.60E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for excavation of soil (notification level). See condition: Release Rates: Excavation and Retrieval of Containers.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) CONTAMINATION MONITORING - Routine
Boundary surveys would be performed in addition to radiological control air monitoring and field surveys performed during the work and end-of-shift activities. Routine on-going contamination surveys of all contaminated areas would occur weekly. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(8))

5) CONTAMINATION CONTROL- Dust Suppressants
Dust control or suppressants such as water, fixatives, atomized misting, covers, windscreens, or weather enclosures will be used as necessary to minimize airborne contamination as determined by the Radiological Control organization. (WAC 246-247-040(5) and WAC 246-247-060(5))

6) CONTAMINATION CONTROL- End of Shift or High Winds
Spoil piles containing radiologically contaminated soil >20 dpm/100cm^2 alpha or > 1000dpm/100cm^2 beta/gamma will be segregated to the extent practicable from the nonradiologically contaminated soil. Containerizing spoils for disposal may be performed. Dust controls such as water, fixatives, or covers will be applied at the end of each shift or when sustained or predicted wind speeds are >20mph. The fixatives or other dust controls will not be required when the contaminated items are frozen, or it is snowing, or other freezing precipitation is falling and predicted wind speeds are <20mph (WAC 246-247-040(5) and WAC 246-247-060(5))

7) PROCESS DESCRIPTION: Excavation and Retrieval of Containers
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Work will be performed in accordance with as low as reasonably achievable (ALARA) requirements as determined by the Radiological Control organization.
One type of configuration is a V notched trench, containers in some trenches may not have been stacked or placed in any orderly manner for burial. The specific steps or approach to uncovering the containers will vary according to the configuration of the trench to be uncovered, the type of containers to be retrieved, the proximity of nearby trenches or fences, the designated location of the spoils pile, the planned extent of the soil removal, and other considerations.

Work to be performed within some trenches may be performed within a weather resistant structure(s) that will be re-locatable along the trench. Weather enclosures are effectively used for similar remediation activities at other U.S. Department of Energy (DOE) sites and in general industrial use. Experience during retrieval activities has shown that operational efficiencies can be improved if the operations are protected from impacts due to weather such as wind, rain, snow, and temperature extremes. The use of a weather resistant enclosure could allow a more effective recovery from events involving degraded containers and potential contamination spreads.

Prior to and during overburden removal, subsurface surveys such as ground penetrating radar, electromagnetic inductance, and magnetometer are performed. These surveys provide information regarding container depth, configuration, type, and condition. They may also identify and locate underground obstructions.

The overburden soil will be removed to expose the waste containers. Excavation equipment will be chosen to effectively remove soil and retrieve the waste containers while minimizing damage to the containers. Excavation activities will be monitored to identify contamination that might be present and to implement controls to minimize emissions.
The most efficient methodology for removing the uncontaminated overburden from the containers will include the maximum use of conventional methods such as excavators, backhoes, front end loaders, brooms (boom mounted), or manual digging with shovels and similar hand tools. To excavate contaminated soil, hand tools predominantly

will be used. Remotely-operated vehicles may be used to minimize personnel exposure in areas where high radiological and/or chemical hazards are discovered or anticipated. High efficiency particulate air (HEPA) filtered vacuums may be used for soil excavation for this application. Spot contamination removal will be done in accordance with the HEPA filtered vacuum unit (HVU) NOC (DOE/RL 97 50, Radioactive Air Emissions Notice of Construction for HEPA Filtered Vacuum Radioactive Air Emission Units, as amended). Within the V Notched trenches, it is more likely that the use of a HEPA-filtered vacuum to remove larger quantities of soil from the top surface of buried containers and soil materials in the interstices surrounding containers will be employed. Any use of the site wide HVU will be performed under the NOC applicable to the unit.

An estimated 300 cubic meters of soil at contamination detection levels occupies the void spaces between the containers buried in the trenches.

Excavation activities will be controlled closely. Heavy equipment, hand tools, light equipment, or HVUs will be used to complete the soil removal operations and to access and remove the plastic and plywood materials covering the containers.
All containers will be inspected to verify integrity. The container inspection will consist of a visual examination to determine if there are significant indications of corrosion, holes, dents or other visual deformities. All containers could be moved, turned, or otherwise relocated (manually or with powered equipment, slings, clamps, or appropriate rigging) to facilitate an adequate visual inspection.

The exposed containers will also be visually inspected and surveyed for contamination. Externally contaminated containers will have fixative applied or will be decontaminated. Containers may also be bagged or over packed as needed. Over packing means placing containers within a larger closed container. Bulging or potentially pressurized containers will be vented as described in PROCESS DESCRIPTION: VENTING OF CONTAINERS.

Severely degraded containers will be repackaged or in-situ grouted. Repackaging means transferring the contents of a degraded container into a new container or containers. The entire contents of the container will not be sorted but will be placed into the new container or containers through the use of slings, clamshell excavators, manual labor, or the best available method that minimizes potential emissions.

Repackaging may include size reduction. Size reducing, cutting or disassembling material and equipment may be required to ensure personnel safety and/or more economical waste packaging. The process will include mechanical cutting techniques such as low speed sawing, drilling, snipping, and shearing. The process will also include bending and crimping to preclude the need for cutting operations where possible.

Containers may include but are not limited to drums, metal boxes, concrete boxes, fiberglass reinforced boxes, culverts, and sealed gloveboxes.

In-situ grouting will involve grouting around and/or throughout the waste, such that the entire waste container can be removed as a monolith. Retrieval activities will include appropriate disposition of small amounts of incidental contaminated soil (e.g., containerized or fixed in place). Larger areas of contamination could be fixed and the area posted as required by the Radiological Control organization for later disposition. Bulk transfer of contaminated soils for disposal also could occur.

Some containers will be assayed and, if they assay as TRU waste, they may be further examined to determine whether they contain items prohibited from disposal at the Waste Isolation Pilot Plant (WIPP). Any prohibited items will be removed at a later date. Unvented TRU waste containers may be staged for venting in the burial grounds or may be moved to the Central Waste Complex (CWC) or another treatment, storage or disposal (TSD) site for venting.

A number of retrieved containers are in good condition but are not vented. Although not technically meeting the definition of 'sealed' containers, Washington State Department of Health (WDOH) has recognized these as closed containers such that potential emissions from these non vented containers need not be included so far as potential emissions specific to waste during removal from the trenches. Once vented, the containers are included for calculating release rates in NOC 486, Process Description: Staging of Retrieved Containers for staging and handling operations. An estimated annual maximum of 15,200 vented containers of waste will be managed during the peak years of this project.

Containers may be staged in the burial grounds pending further processing or transfer. Waste containers are considered retrieved once transferred to an approved TSD facility. (WAC 246-247-040(5) and WAC 246-247-060(5))

8) PROCESS DESCRIPTION: Venting of Containers
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

All work will be performed to meet ALARA practices and will be conducted according to applicable operating procedures, radiological control procedures, and radiological work permit (RWP's).
Vent filters will continue to be installed in designated containers via one of the drum venting systems described in this process description. These systems will ensure personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid or puncturing the lid with a filter dart (using Dart System). Container venting systems are described in the following text. Designated drums slated for venting will be vented with the Mobile Drum Venting System (MDVS), Drum Venting System 2 (DVS2), or other venting methods. (WAC 246-247-040(5) and WAC 246-247-060(5))

9) ABATEMENT TECHNOLOGY: Excavation and Retrieval of Containers
The administrative control points set in this emission unit for contamination, as monitored by standard radiological field instrumentation, will be used to bound emissions based on current efficiencies of typical RadCon field contamination instruments.

The controls listed within this approval apply to TRU Waste Retrieval Project open air excavation and retrieval activities. (WAC 246-247-040(5) and WAC 246-247-060(5))

10) RELEASE RATES: Staging of Vented Containers
A maximum of 15,200 vented containers of waste (including TRU waste containers, containers that are not designated as TRU waste, and those which could be retrieved with vents in place) will be retrieved per year. Once vented, the containers will be staged with the other retrieved containers for further handling, resulting in the staging/storage of a maximum of 15,200 vented containers per year at the LLBG. Using a release fraction of 2.0 E-09 for fugitive emissions from vented containers (as used in Radioactive Air Emissions Notice of Construction Application for the Waste Receiving and Processing Facility, DOE/RL 2000 34), the predicted release rate from the staging of vented containers without any emissions control equipment is 6.1E-04 Ci/yr, with 3.8E-05 Ci/yr attributed to Am-241+Progeny (representing total alpha) and 5.7E-04 Ci/yr attributed to Cs-137+Progeny (representing total beta/gamma). No credit is taken for abatement; therefore, the predicted abated release rates are assumed to be the same as the predicted unabated release rates. (WAC 246-247-040(5) and WAC 246-247-060(5))

11) RELEASE RATES: Excavation and Retrieval of Containers
To determine the corresponding soil concentration in picocuries per gram of individual radionuclides, conversion factors, as developed in HNF 2418, Soil Contamination Standards for Protection of Personnel were used. The average soil density was assumed to be 98 pounds per cubic foot. The beta gamma contributing radionuclides were assumed to be represented by Cesium 137+Progeny and the alpha contributing radionuclides were assumed to be represented by Am 241+Progeny (predominant alpha contributing radionuclide in the soil is unknown; therefore, assumption of Am 241+Progeny will produce the most conservative dose consequence). The respective volumes of contaminated soil (i.e., 300 m^3, 3 m^3, and 0.3 m^3) at the three contamination levels are considered as released during manual excavation, using a release fraction of 1.0 E-3.

The estimated 300 m3 of soil in contact with the containers is assumed to be contaminated at detectable levels (100 dpm/100 cm2 alpha and 5,000 dpm/100 cm2 beta/gamma direct readings based on past operations and the pilot dig). A smaller percentage (1%) of the contaminated soil (i.e., 3 m3), is assumed to be contaminated at higher levels (2,000 dpm/100 cm2 alpha and 100,000 dpm/100 cm2 beta/gamma). Contamination at notification levels (28,000 dpm/100 cm2 alpha and 500,000 dpm/100 cm2 beta/gamma) is not expected. However, as a contingency planning estimate, 0.1% of the contaminated soil (i.e., 0.3 m3) is assumed to be contaminated at notification levels (WAC 246-247-040(5) and WAC 246-247-060(5))

12) RELEASE RATES: Dart and Other Venting Systems
A maximum of 4,200 containers per year will have installation of Nucfil® or equivalent filters using the Dart or FRP Systems. A conservative time estimate for pressure release during each installation is 1 hour. Using a release

fraction of 1.0 E-3 for particulates and a time factor of 4.8E-01 (60 minutes per container multiplied by 4,200 containers and divided by 526,000 minutes per year), the predicted release rate (unabated) from using the Dart or FRP System for installation of Nucfil or equivalent filters without any emissions control equipment is 9.6E-03 Ci/year. Following installation of the Nucfil or equivalent filter, the emissions are routed through the HEPA-type Nucfil or equivalent filter (certified 99.97% removal efficiency); therefore, the predicted release rate (abated) with emissions control equipment is 4.8E-06 Ci/year. The predicted release rates for the representative radionuclides Am-241+Progeny and Cs-137+Progeny are as follows:

Unabated PTE; Am-241+Progeny 6.0E-04 Ci/yr. : Cs-137+Progeny 9.0E-03 Ci/yr.
Abated PTE; Am-241+Progeny 3.0E-07 Ci/y : Cs-137+Progeny 4.5E-06 Ci/yr.
(WAC 246-247-040(5) and WAC 246-247-060(5))

13) WDOH NOTIFICATION - Implementing PES or NGR Containment
During high hazard work activities, removable surface contamination is maintained less than 2,000,000 dpm/100 cm^2 alpha and/or less than 4 rad/hr./100 cm^2 beta-gamma, limited to a 1 ft^2 area. For an allowed increase in contaminated area footprint of 4 ft^2 the limiting condition for removable contamination will be 500,000 dpm/100 cm^2 alpha and or 1rad/hr./100 cm^2 beta-gamma. Exceeding any of these contamination limits will require work to stop, and notification to Operation and RadCon management in accordance with the RWP. Notification to WDOH via email or the established procedures in the Environmental Notification program will be required. For work to continue above any of these limiting radiological conditions, the NGR containment system or the PES and commensurate controls will be implemented. The NGR containment or PES exhaust system will be utilized to minimize the potential for contamination spreads outside of posted radiological areas. (WAC 246-247-040(5) and WAC 246-247-060(5))

14) WDOH NOTIFICATION - Transition to High Hazard Work Package
During medium hazard work activities, removable contamination will be maintained less than 20,000 dpm/100 cm^2 alpha and/or less than 1,000,000 dpm/100cm^2 beta-gamma and the removable contamination area limited to 4 ft^2. Exceeding these limits will require work to stop, and notification to Operation and RadCon management in accordance with RWP. Notification to WDOH via email or the established procedures in the Environmental Notification program will be required. For work to continue above these limiting radiological conditions, the high-hazard work package and associated controls shall be implemented. (WAC 246-247-040(5) and WAC 246-247-060(5))

15) WDOH NOTIFICATION - Drum Vent Failure
The department shall be notified via email or the established procedures in the Environmental Notification program within 24 hours of all drum vents that fail to be installed properly and smears show >2,000 dpm/100 cm^2 alpha or >100,000 dpm/100 cm^2 beta/gamma removable contamination (an example of a "failure" is a pressure release that blows past the seat of the boot or a deflagration). (WAC 246-247-040(5) and WAC 246-247-060(5))

16) WDOH NOTIFICATION - Loss of Containment
WDOH will be notified per WAC 246-247-080(5) via email or the established procedures in the Environmental Notification program if a loss of containment occurs (dropping, spilling, puncturing a container, or otherwise encountering loss of integrity where contamination escapes containment), which exceeds 100,000 dpm/100 cm^2 beta/gamma or 2,000 dpm/100 cm^2 alpha removable contamination. (WAC 246-247-040(5) and WAC 246-247-060(5))

17) WDOH NOTIFICATION - Transition to High Hazard Designation
During soil removal activities, if direct contamination readings for the general area is greater than 28,000 dpm/100 cm2 alpha or greater than 500,000 dpm/100 cm2 beta-gamma, work will stop, the environmental compliance officer, RadCon Management and WDOH will be notified via email or the established procedures in the Environmental Notification program, and the controls listed immediately below, implemented. Once notifications have been made and the following controls implemented, work may resume under high hazard designation:

a. Soil will be wetted prior to soil removal; and soil will be maintained damp during soil removal.
B. General area workplace air sampling will be performed.
(WAC 246-247-040(5) and WAC 246-247-060(5))

18) ALTERNATIVE APPROVAL - Unabated Emissions
The potential unabated dose rate from manual excavation is 7.5 E-4 mrem/year. No credit is taken for abatement; therefore, the abated emissions are assumed as the unabated emissions. Although fixatives and similar controls will be employed for the higher contamination level and notification level contamination, no credit is being taken for abatement; therefore, the abated dose rate is the unabated dose rate. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

19) ALARACT APROVAL - Container Handling
The process for handling of abnormal or severely degraded containers as described in Process Description: Excavation And Retrieval of Containers, for bagging, over packing, placing degraded outer container contents into replacement containers or in-situ grouting is approved as meeting ALARACT, and these processes and associated records and procedures will be subject to inspection upon request by the department. (WAC 246-247-040(5) and WAC 246-247-060(5))

20) ALTERNATIVE APPROVAL- WDOH NOTIFICATION-Administrative Control on Emissions
WDOH accepts the method proposed for calculating the estimated dose with the limitation that the annual release of the sum of the fractions of the curies released/annual release cannot exceed a value of 1 for alpha/beta plus gamma release. The limit on annual release shall not exceed 2.1 E-2 Ci/year using Am-241+D as a representative for alpha calculations and 1.15 E0 Ci/year using Cs-137+D as a representative for Gamma calculations, collected at a point not to exceed 10 meters from the work area of disturbed material. WDOH will be notified when the sum of the fractions reaches a value of 0.8 representing 0.08 mrem/year to the MEI, and additional controls will be initiated to ensure that the dose to the MEI does not exceed 0.1 mrem/year. Workplace air sampling will be conducted when performing work.

21) CONTAMINATION CONTROL - Limits to Initiate NGR or PES
Adherence to contamination limits in the immediate work location for medium and high-hazard work will help ensure that the work area airborne radioactivity limits (i.e., 1.0E-09 µCi/ml for alpha emitters and 2E-06 µCi/ml for beta-gamma emitters) are not exceeded. (WAC 246-247-040(5) and WAC 246-247-060(5))

22) CONTAMINATION DOCUMENTATION - Exposed Packages
During repackaging activities (i.e., when transferring the contents of a degraded container into a new container or containers) an operations log will be kept noting conditions of the transferred contents/packages.. RadCon will generate and retain radiological records documenting air sample results and removable contamination conditions during retrieval of each container. (WAC 246-247-040(5) and WAC 246-247-060(5))

23) CONTAMINATION CONTROL - Function Check Misters and Sprayers
Atomized misters and fixative sprayers will be function checked at the work site prior to commencing work activities. (WAC 246-247-040(5) and WAC 246-247-060(5))

24) CONTAMINATION CONTROL - NGR/PES Activities
Activities done under confinement structure of PES and NGR will be considered to be diffuse and fugitive activities unless under active ventilation conditions. (WAC 246-247-040(5) and WAC 246-247-060(5))

25) CONTAMINATION CONTROL - Soil Excavation Near Containers
Manual methods or HVU will be used to excavate soil in close proximity to containers. (WAC 246-247-040(5) and WAC 246-247-060(5))

26) CONTAMINATION CONTROL - Transporting Waste Packages
Radiological contamination and dose rate monitoring will be conducted prior to transporting any waste containers. All waste will be contained as appropriate for transport. Covers such as tarps or plastic will be placed over deteriorated containers at the end of each shift. These practices of monitoring, container integrity inspections, and placement of covers will ensure good contamination control practices are observed during package handling activities, soil removal (excluding overburden removal) and over packing activities and when placing degraded outer container contents into replacement containers. (WAC 246-247-040(5) and WAC 246-247-060(5))

27) CONTAMINATION CONTROL - Bulk Transfer of Contaminated Soil
The soil surface will be wetted prior to bulk transfers of contaminated soil. (WAC 246-247-040(5) and WAC 246-247-060(5))

28) CONTAMINATION CONTROL - Wind Speed
Work performed outside (excavation and/or container retrieval) will stop if average wind speeds exceed 11 mph during the work and Contamination Area or Airborne Radioactivity Area conditions exist. (WAC 246-247-040(5) and WAC 246-247-060(5))

29) CONTAMINATION CONTROL - Limits to Trigger Further Airborne Controls
Radiological field survey monitoring will use set points for removable surface contamination levels of >1000 dpm/100 cm^2 beta/gamma and >20 dpm/100 cm^2 alpha to trigger the need to further evaluate airborne controls or evaluate further preparation of materials for release. (WAC 246-247-040(5) and WAC 246-247-060(5))

30) CONTAMINATION CONTROL - Soil Surveys During TRU Retrieval
During excavation activities for retrieval, excluding activities associated with removal of soil overburden, radioactive contamination monitoring for diffuse and fugitive emissions will consist of soil surveys at least hourly

for both alpha and beta/gamma contamination during TRU Waste Retrieval operations. (WAC 246-247-040(5) and WAC 246-247-060(5))

31) CONTAMINATION CONTROL - Removable Contamination Survey
Both Alpha and beta-gamma contamination field surveys shall be performed for all removable contamination surveys, prior to and during soil removal (excluding overburden removal) and over packing activities and when placing degraded outer container contents into replacement containers. Alpha surveys shall be performed for direct readings of container surfaces. Beta/gamma direct readings may be influenced by container contents, so are not as useful and are not required. (WAC 246-247-040(5) and WAC 246-247-060(5))

32) CONTAMINATION CONTROL - Fixatives
Fixatives or other controls will be employed if removable contamination levels exceed 100,000 dpm/100 cm^2 beta/gamma or exceed 2,000 dpm/100 cm^2 alpha. (WAC 246-247-040(5) and WAC 246-247-060(5))

33) CONTAMINATION SAMPLING - ARA
Workplace air sampling at the work site perimeter (on all four sides of the work location) and downwind of the container work location will be conducted when performing work in an Airborne Radiological Area, providing early indication of potential elevation in work site perimeter airborne radioactivity. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(8))

Emission Unit ID: 1449

200

Tank Farm Guzzler

This is a MINOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 12.00 ft. 3.66 m. Stack Diameter 0.75 ft. 0.23 m.

Average Stack Effluent Temperature: 54 degrees Fahrenheit. 12 degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Collection Tank and Plate Separator	1	
	Cyclone Separator	2	
	Micro-strainer Device	1	
	HEPA Filter	3	Three in-place tested HEPA filters in parallel.
	Baghouse	2	Baghouse system with a total of 68 bags(i.e., 34 bags per baghouse).

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114(3)	Each radionuclide that could contribute greater than 10 percent of the PTE TEDE to the MEI, greater than 0.1 mrem/yr PTE TEDE to the MEI, and greater than 25 percent of the TEDE to the MEI after controls.	When the HEPA filters are replaced and annually screening the HEPA filtration system.

Sampling Requirements Radiation surveys and to include but not limited to non destructive analysis testing of the HEPA filters and screening the HEPA filtration system using gamma spectroscopy.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The Guzzler portable emission unit is a completely self-contained vacuum used to support operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Guzzler Operation in Tank Farm Facilities (Replaced NOC 774)	AIR 17-112	1/9/2017	1064

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.00E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.00E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may

be conducted.

The utilization of the Guzzler for excavation of soil and gravel within the 200 Area Tank Farm Complex. Activities shall include potholing for utility locations, and general soil/debris/gravel removal and excavation.

Backfilling activities shall be completed manually using shovels, backhoes, loaders, and packers.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	2.40E+00	Beta - 0	3.00E+01
Based on Am241		Based on Sr90+D	

4) REPORTING-NDA on Filter Change and Annual Gamma Spectroscopy
Aerosol testing and NDA of Guzzler HEPA filters shall be conducted annually per NOC 1072 or subsequent revision.

5) ABATEMENT CONTROL-Stop Work Trigger
Health Physics Technician shall field survey every vertical and linear foot of excavation. The "Stop Work Trigger" is 10,000 cpm per probe size (15cm^2-GM, P-11 Probe) beta-gamma and 20 cpm per probe size (50 cm^2-Portable Alpha Monitor (PAM)) alpha from direct contamination readings 1 cm above soil surface.

6) CONTAMINATION CONTROL-Smear of Guzzler Exhaust
HPT shall survey (smear) the Guzzler exhaust (discharge) at the end of each shift of Guzzler use.

7) RELEASE FRACTION EVALUATION-Initial and Quarterly NDA Required
A pre-operational NDA of the HEPA filters will be required prior to use of the Guzzler pursuant to this license. Alternatively, a pre-operational NDA will not be required if the HEPA filters have not been used since the last NDA or the HEPA filters are new. An NDA of the HEPA filters will be required with every 90 calendar days of use within the 200 Area Tank Farm Complex. This 90 day period is defined as 90 calendar days past the first day the Guzzler is used within the 200 Area Tank Farm Complex. The Guzzler tracking log will track the accumulated PTE for this emission unit (EU 1449) annually, where ever it is used on the Hanford Site. The Guzzler tracking log will be required to track the accumulated PTE based upon soil contamination readings and adjusted (only for operation under this approval) by the release fraction of 1.0E-03.

Once the Guzzler is in use under this license an NDA is required prior to exit from use in the 200 Area Tank Farm Complex to use elsewhere on the Hanford Site.

If the accumulated PTE, within the 200 Area Tank Farm Complex, based upon the tracking log reaches 0.025 mrem/yr, an additional NDA of the HEPA filters will be required and the 90 day NDA cycle will begin again. If the accumulated PTE, within the 200 Area Tank Farm Complex, based upon the tracking log reaches 0.0375 mrem/yr, another NDA of the HEPA filters will be required and the 90 day cycle will begin again. If the accumulated PTE, within the 200 Area Tank Farm Complex under this license, based upon the tracking log reaches 0.05 mrem/yr, use of the Guzzler must stop for the remainder of the calendar year.

After a year of operations under these approval conditions, an evaluation of the results shall be made available to the Department to assess if the release fraction of 1.0E-03 is conservative. A minimum of four (4) NDAs is required for the evaluation.

8) WDOH APPROVAL-Release Fraction Verification Needed
The request for approval for release fraction to be changed from 1 to 1.0E-03 is approved and will be verified as conservative using condition 7.

9) REPORTING-Limits on Emission by Use
200 Area Tank Farm Complex:

For Guzzler Excavation: 1.60E-04 mrem/yr Beta based on Sr-90+D, 2.50E-02 mrem/yr Alpha based on Am-241, 2.50E-02 mrem/yr total unabated dose and 1.00E-05 mrem/yr abated dose.

For Backfilling: 1.60E-04 mrem/yr Beta based on Sr-90+D, 2.50E-02 mrem/yr Alpha based on Am-241, 2.50E-02 mrem/yr total unabated dose and 2.00E-2 mrem/yr abated dose.

10) REPORTING-Total Combined Dose to the Offsite MEI
This emission unit is limited to an annual abated dose to the offsite MEI of 5.0 E-2 mrem/yr when combined with

the abated offsite dose to the MEI for Emission Unit 476 " Guzzler™".

Emission Unit ID: 1462

200

Decon Trailers TRU Waste Retrieval (Diff/Fug)

This is a MINOR, FUGITIVE, non-point source emission unit.

Miscellaneous Support Facilities

Abatement Technology NONE WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-040(5) & WAC 246-247-060(5)	Hanford Site Near-Facility Environmental Ambient Monitoring Program	Alpha/Beta/Gamma	Per the sitewide ambient monitoring program, samples will be collected from the existing near-facility monitoring stations.

Sampling Requirements Radiological field surveys and near field monitoring

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit covers Diffuse and Fugitive emissions in Transuranic Decontamination trailers where contaminated material or individuals enters into the trailer when the active powered exhaust is not operational.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Decon Trailers TRU Waste Retrieval Diffuse/Fugitive Operation (replaces NOC 851)	AIR 17-117	1/9/2017	1069

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.55E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

All work will be performed in accordance with approved radiological control methods and as low as reasonably achievable (ALARA) program requirements. These requirements will be carried out through radiological control procedures.

The general physical processes associated with decontamination activities in the decontamination trailer will consist of the following:

a.) On identification of the need for additional decontamination of personnel, affected individuals will be escorted to the decontamination trailer.

b.) As appropriate, contaminated clothing, coverings, and/or articles will be removed, packaged, and dispositioned in accordance with applicable facility waste handling procedures.

c.) Personnel decontamination processes might include various methods or a combination of cleaning agents (e.g., soap and water, pre-moistened towelettes, shaving cream-type

foam decontamination agents for facial areas, removal of hair, and abrasive soaps for toughened skin surfaces [e.g., hands and feet]).

D.) Spent decontamination solutions will be transferred from the holding tanks directly to a mobile disposal unit or containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

Periodic maintenance inspections of the decontamination trailer will be performed without use of containment or portable exhausters.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.55E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	8.37E-04	Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Any radionuclide might be present Am-241 is representative of the alpha-emitting radionuclides present.			
Cs - 137	4.19E-03	Solid	WAC 246-247-030(21)(a)
Beta/Gamma release rate based on Cs-137. CS-137 is representative of the Beta/gamma-emitting radionuclides present..			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241 Cs - 137

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) MONITORING-Near Field Monitoring and Radiological Surveys
Periodic Confirmatory Measurements (PCM) for the diffuse and fugitive emissions shall be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates. (WAC 246-247-040(5) , WAC 246-247-060(5) and WAC 246-247-075(4))

5) EMISSIONS-Included in Overall Fugitve and Diffuse Estimate
Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter. (WAC 246-247-040(5) , WAC 246-247-060(5) and WAC 246-247-075(4))

Emission Unit ID: 1464

200E

Integrated Disposal Facility (IDF)

This is a MAJOR, FUGITIVE, non-point source emission unit.

Integrated Disposal Facility (IDF)

Abatement Technology NONE WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-040(5) & WAC 246-247-060(5)	Hanford Site Near-Facility Environmental Ambient Monitoring Program	Alpha/Beta/Gamma	Per the sitewide ambient monitoring program, samples will be collected from the existing near-facility monitoring stations.

Sampling Requirements Radiological field surveys and near field monitoring

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This facility is a landfill similar in concept to the Environmental Restoration Disposal Facility, but the IDF is built to a much smaller total capacity (approximately 1 million cubic meters) than its ERDF counterpart.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Integrated Disposal Facility (IDF) Operation (replaces NOC 848)	AIR 17-116	1/9/2017	1068

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.85E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 4.80E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The IDF will provide for disposal of two types of waste: Low Level Waste (LLW) and Mixed Low Level Waste (MLLW). MLLW includes Immobilized Low-Activity Waste ILAW (the glass waste form) (Waste Treatment Plant WTP ILAW and Demonstration Bulk Vitrification System ILAW) and newly generated IDF operations waste.

MLLW and LLW cells in the IDF have equally sized ultimate capacities of 450,000 m3 (1.50x10+7 ft3) each, for the full IDF build out capacity of 900,000 m3 (3.18x10+7 ft3) (RPP 21633, “Preliminary Closure Plan for the Integrated Disposal Facility”). The IDF is expandable up to the full build out capacity. Expansion is dependent upon waste generation and waste generation forecasts. Leachate generation and associated management of the leachate are minimized by the expansion approach.

The forecasted volumes of MLLW from WTP ILAW and Demonstration Bulk Vitrification System vitrified ILAW waste processes were derived from ORP-11242, “River Protection Project System Plan” as follows:

•352,000 m3 (1.24x10+6 ft3) of ILAW packages

The remaining capacity will be used for the newly generated IDF operations waste and will act as a buffer for the two cells' overall capacity, should it be required. The estimate for the MLLW generated from operation of the IDF is unknown; however, based on engineering judgment, the yearly amount would not be significant. The 450,000 m3 (1.59x10+7 ft3) capacity of Cell 1 and associated ILAW volumes are listed as information only. This value is used as a bounding volume for calculating the ILAW radiological air emissions.

Low-level radioactive waste is not spent nuclear fuel, transuranic (TRU) waste, high-level radioactive waste, byproduct material (as defined in Section 11e (2) of the Atomic Energy Act of 1954), or naturally occurring radioactive material (DOE 435.1, Radioactive Waste Management). Both contact handle and remote-handle LLW will be disposed at the IDF.

LLW Category I: This waste contains radioactivity not classified as spent nuclear fuel, TRU waste, or high-level waste. LLW Category I waste also meets the radionuclide limits for Category I waste defined in HNF-EP-0063, "Hanford Site Solid Waste Acceptance Criteria". This waste may be comprised of either contact-handle or remote-handle waste considered low-activity waste with very low concentrations of long-lived radionuclides.

LLW Category III: This waste also contains radioactivity not classified as spent nuclear fuel, TRU waste, or high-level waste. In addition, it exceeds the radionuclide limits for Category I waste and meets the Category III limits defined in HNF-EP-0063. This waste may be comprised of either contact-handle or remote-handle waste considered moderate-activity to high-activity waste with low to moderate concentrations of long-lived radionuclides, in stabilized form that minimizes subsistence for a period of 1,000 yrs.

MLLW is a dangerous, extremely hazardous, or acutely hazardous waste that contains LLW. Contact-handle MLLW has a dose rate equal to or less than 200 mrem/h and contains radioactivity not classified as spent nuclear fuel or TRU waste. Remote-handle MLLW has a dose rate greater than 200 mrem/h and contains radioactivity not classified as spent nuclear fuel, TRU waste, or high-level waste.

Newly generated IDF operations waste is potentially dangerous, mixed, or LLW generated from the operations of the IDF that could include, personal protective equipment, rags, waste material from the maintenance of equipment or vehicles, and waste generated at the leachate waste treatment facility that is returned to the IDF for disposal.

The packages for waste shall meet applicable federal transportation regulations under Title 49, Code of Federal Regulations (49 CFR) container requirements for the hazard class/division of the waste, except that packaging for onsite transfers under an approved package-specific safety document might be allowed where cost or technical constraints make the use of a U.S. Department of Transportation (DOT) compliant package unfeasible. Outer containers shall be in good condition, with no visible cracks, holes, dents, bulges, pit or scale corrosion, or other damage that could compromise container integrity, in compliance with WAC 173-303, "Dangerous Waste Regulations." Minor external surface rust that can be sanded or brushed off will be acceptable. Containers having some pit or scale corrosion could be acceptable for storage provided the integrity of the container is confirmed.

MLLW generated from IDF operations will consist of 208 liter drums, medium boxes, small boxes, long equipment containers, and other containers. MLLW is defined as dangerous or hazardous waste in WAC 173-303, and therefore should be disposed in Cell 1.

LLW will be shipped primarily in 208 liter drums, 322 liter drums, other drums, MB-V boxes, medium boxes, small boxes, and other containers. LLW is not a dangerous or hazardous waste as defined in WAC 173-303, and therefore should be disposed in Cell 2. However, because the volume of remote-handle LLW is expected to be small, remote-handle LLW may be disposed in Cell 1 along with remote-handle MLLW. This would avoid the need to set up remote handling operations in both Cell 1 and Cell 2, and will provide greater flexibility for LLW disposal operations in Cell 2.

WTP – ILAW: MLLW includes the low-activity waste fraction of the Hanford Site tank waste that is immobilized in a glass matrix at the WTP.

Other ILAW Streams – Demonstration Bulk Vitrification System: MLLW that contains the low-activity fraction of the Hanford Site tank waste immobilized in a glass matrix is produced by the Demonstration Bulk Vitrification System.

ILAW Containers and Packaging: The ILAW package shall be compatible with crane lifting and movement. The package shall be equipped with lifting and other handling apparatus designed to allow safe lifting, movement, and stacking of the packages when fully loaded. The package shall maintain its integrity during handling, transportation, and lifting during disposal at the IDF.

The WTP ILAW packages are stainless steel cylinders that have been filled with vitrified low-activity waste, which is physically similar to molten glass, then sealed and cooled. These packages will be remote-handled. The Demonstration Bulk Vitrification System containers, also known as vitrification boxes, are filled with material similar to the material in the ILAW packages. The ILAW and Demonstration Bulk Vitrification System packages will be disposed in Cell 1.

The IDF consists of an expandable, lined landfill in a series of near-surface disposal cells that will be developed in phases located in the 200 East Area on the Hanford Site. The landfill will be divided lengthwise into two distinct cells, Cell 1 for disposal of MLLW and Cell 2 for disposal of LLW. The IDF is designed to provide an approved disposal facility for the permanent, environmentally safe disposition of ILAW, newly generated IDF operations waste and LLW that meets the environmental requirements and is approved by the DOE and the State of Washington, Department of Ecology (Ecology).

The IDF is designed for ILAW package transportation, receipt, unloading, emplacement in a disposal cell, and periodic backfill of the disposal cell. Also included are receipt, unloading, emplacement, and periodic backfill of Demonstration Bulk Vitrification System containers, newly generated IDF operations waste, and LLW from Hanford Site sources. In the initial phase of the IDF, the volume of remote-handle LLW is projected to be very small. Rather than set up a separate remote-handle operation for this small volume of LLW, remote-handle LLW may be placed in the cell with remote-handle MLLW.

Disposal cells are installed in a sequential manner and are aligned within the disposal site in a north-south orientation to minimize impact to the aquifer beneath the site. The cells have separate leachate collection, handling, and storage systems to maintain waste separation.

Two cells will be constructed in the first phase of the IDF, Cell 1 (west half) and Cell 2 (east half). Each cell is approximately 3.2 hectares (8 ac) in size, and when fully developed, the completed IDF will occupy approximately 25 hectares (62 ac) Subsequent phase development of the IDF will connect to the southern edge of Cells 1 and 2 such that the bottom grades are continuous between cells.

Support facilities, such as changing rooms, a lunchroom, and offices, will be provided for IDF personnel. Changing facilities for male and female personnel will be furnished with lockers, showers, restroom facilities, benches, and both clean and dirty laundry storage. The building also will contain office space and a control room, and is planned to be a radiologically clean facility.

ILAW: The ILAW packages will be transported from the WTP and Demonstration Bulk Vitrification System to the IDF by the onsite, DOT compliant transportation system. The recommended mode of transport is a commercially available tractor/trailer combination capable of hauling ILAW packages in a DOT compliant, shielded over pack. The configuration required will depend on the total weight and weight distribution relative to the axles to insure the axle load limitations for roadway use are not exceeded.

LLW and MLLW: Various transport vehicles will be used to transport other wastes to the IDF. Commercially available tractor/trailer combinations typically will be used for LLW. LLW will be transported from various locations within the Hanford Site. Container sizes and shapes will vary but are expected to be mostly rectangular or drums of standard sizes. The timing and frequency of delivery to the IDF will vary, depending on operations and waste generation rates from the facilities where these wastes are generated. Transport to the IDF site for disposal will be coordinated with IDF transport operations to avoid conflicts or disruptions to IDF transport schedules, which will take precedence.

Upon arrival at the IDF, the loaded transporter will proceed through the disposal site gate and stop at the receiving station. The receiving station will be provided by the operations contractor.

At the receiving station, the shipping documents will be verified and the packages will be inspected. The operation concepts for the arrival activity will include:

The truck driver will present shipping documents to facility operations personnel at the receiving station. A shift supervisor or quality control inspector will verify that the shipping documents are acceptable.

After shipping documents are verified and the transporter passes inspection, the loaded transporter will be released to travel to the full trailer staging area for cooling, as needed.

Cool-Down Staging Area – ILAW: When the ILAW packages are received for transportation, they may still be at elevated temperatures. Because of possible elevated temperature, operations restrictions will be in place during transportation and prior to disposal in the IDF. Once the ILAW package is received at the IDF, the full trailer will be staged in a designated area within Cell 1 over the bottom liner in a place where trailer storage will not interfere with other IDF operations. This area will be moved from time to time, to avoid interference with the waste disposal operations.

ILAW: After the ILAW package has cooled sufficiently, the trailer will be moved to an appropriate unloading position in Cell 1. Once in position, a crawler crane will be used to move the ILAW package from the transportation container into the designated disposal location within the disposal cell.

Periodically, after emplacement of approximately 81 ILAW package, the crawler crane must move to a new unloading station. Void-fill operations will be performed by a mobile crane after the crawler crane moves to a new unloading position.

LLW and MLLW: Unloading and placement of remote-handle MLLW and LLW will be done using a crane. Unloading and placement of contact-handle MLLW and LLW will be done using a crane or other appropriate equipment.

General Waste Placement and Layer Construction Procedures: The IDF configuration is based on four layers with a uniform height of 3.3 m (10.8 ft.) (2.3 m [7.5 ft.] ILAW package plus 1 m [3.3 ft.] operations layer). Waste containers other than the ILAW packages will be variable height and will be placed in the 3.3 m (10.8 ft.) high layers to achieve best use of space. Containers may be stacked on top on each other within each layer if adequate soil cover is provided over the containers. Additional waste container stability analyses will have to be done by the operations contractor to verify waste placement and backfill stability for stacked containers. Containers that have a height greater than the 3.3 m (10.8 ft.) layer height will be allowed to project out of the top of the layer. In such cases, it may be necessary to mound cover soil around the individual projecting containers to provide sufficient cover for shielding until they are completely covered by subsequent layers.

Because of the large area available for waste disposal in each cell, flexibility to relocate filling operations to another area within each cell will exist if an event occurs that causes operations to temporarily halt placement of ILAW packages or other waste containers at the current working position. This will allow waste container placement to continue while the situation that caused the operations to cease is resolved.

ILAW: Two basic configurations were developed. Both make use of ecology block shield walls to shield the crane operator from exposure to the ILAW packages, with one using a temporary shield wall and the other using a permanent shield wall. Both of the basic ILAW package configurations include two variations. One variation is a grid pack arrangement of the ILAW packages and the other variation is a tight pack arrangement.

Temporary Shield Wall Configuration: The ILAW package configurations that use a temporary shield wall will require that cover soil be placed over and around the ILAW packages prior to removing the shield wall. This soil cover will have to include the side of the ILAW packages facing the temporary shield wall so that after the wall is removed, the soil will provide the shielding for equipment operators and other operations personnel.

Permanent Shield Wall Configuration: By leaving the ecology block shield wall in place, the wide area between

the ILAW packages and the shield wall for the cover soil to slope to the ground can be eliminated. The ILAW package configurations that use a permanent shield wall will allow ILAW packages to be placed up close to the wall, thereby making better use of the available space in the landfill.

Grid Pack and Tight Pack Arrangements: With the grid pack array, the ILAW packages will be placed in a close packed square arrangement. The grid pack array consists of four packages in the array, which is square in shape with a base dimension of slightly over 0.6 m (2 ft.). With the tight pack array, the ILAW packages will be placed in a close packed triangular arrangement. The tight pack array consists of three packages in the array, which is triangular in shape with an altitude dimension of approximately 0.5 m (1.5 ft.).

LLW and MLLW: Packaging emplacement configurations will depend on opening size and volume of interstitial spaces between LLW and any MLLW containers from IDF operations, and on configuration of the containers and the placement of the containers relative to one another. The placement of the containers will be carefully planned to efficiently pack the containers into the smallest volume possible, and to avoid large interstitial spaces.

The general approach to calculating backfill quantities uses a volume of fill to waste ratio of 1.5 to 1.

Radiation exposure assessment evaluations have determined that 0.5 m (1.5 ft.) of soil cover placed over the ILAW packages with a crane prior to operation of equipment on the cover soil will provide adequate radiation shielding to equipment operators. The surface of the initial 0.5 m (1.5 ft.) layer will be smoothed and leveled with a bulldozer to facilitate subsequent compaction and placement of the final lift.

After completion of the partial placement of the operations layer with the mobile crane, placement of the operations layer to the full 1 m (3.3 ft.) depth will be completed using a loader, dump truck, bulldozer, and compactor. The specific movements and activities of earthmoving equipment will be based on disposal cell configuration plans and elevation monuments established prior to initiating a new layer.

Compaction of the initial 0.5 m (1.5 ft.) of the operations layer and placement of the remainder of the operations layer will not take place in the active array in which packages are being placed. Rather, the remainder of operations layer placement will take place in the previous array of ILAW packages so that there will be a placed and partially covered array of ILAW packages in place to stabilize and support the bulldozer. In addition, compaction of the initial 0.5 m (1.5 ft.) of operations layer should not take place until all the voids between the permanent shield wall and the ILAW packages have been filled, and the initial 0.5 m (1.5 ft.) of the operations layer has been placed in the active array of ILAW packages to provide shielding from the ILAW packages for the bulldozer operator. Compaction of the first 0.5 m (1.5 ft.) layer of cover soil placed by the mobile crane and smoothed by the dozer should be accomplished with a vibratory roller. The vibrations of the compactor will help to fill voids that may have occurred during interstitial space filling by promoting cover soil to flow into the voids. As cover soil is moved into the voids below, additional soil placement will be required to replace the migrating material. This material should be the same low moisture content, low fines content sand from the onsite soil source as that used for interstitial fill. The remaining thickness of cover fill, up to the full 1 m (3.3 ft.) thickness, will be placed by a bulldozer operating on top of the layer and compacted with a vibratory roller. The soil for this upper layer should include a higher fines content of up to 25 percent, and should be placed and compacted at or slightly below optimum moisture content.

In general, the loader, which will be stationed at the soil stockpile, will fill a dump truck. The dump truck will deliver cover soil to a location near the package array to be covered. The bulldozer then will spread the soil over the package array to the full 1 m (3.3 ft.) depth.

A water truck will be provided for compaction and dust control. The truck will be operated as needed to spray water for compaction and to suppress dust by driving to a location safe for the operator to spray water over the cover material being compacted. In addition to dust control and compaction within the trench, an operations dust control plan will be developed to cover other areas within the boundary of the IDF.

A temporary rain curtain may be used to control the amount of clean storm water run-off that enters the leachate collection system. The rain curtain can be used in areas where no ILAW packages have been placed or in the areas where ILAW packages and the full 1 m (3.3 ft.) operations layer have been placed. The rain curtain would be removed prior to placing additional waste in the area that it covered.

The Leachate Handling Systems shall be designed to segregate MLLW leachate generated in Cell 1 from the LLW leachate generated in Cell 2. The Leachate Handling System shall be designed to manage the leachate generated from a 25 year, 24 hour storm event collected over the entire footprint of the landfill.

The leachate handling system design shall also comply with the following technical requirements:

The landfill shall control water that contacts waste through physical barriers and collection through the leachate collection system. This system shall collect, pump, and store any water that migrated through the landfill and shall provide systems for loading leachate into transport trucks. Leachate meeting the treatment facility waste acceptance criteria shall be transported by truck for storage at the treatment facility. The leachate will then be transferred for treatment. Any leachate not meeting treatment facility waste acceptance criteria will be handled on a case-by-case basis and will be handled, stored, and disposed in accordance with federal and state regulations.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.50E+00	Am - 241	7.61E+05	Am - 243	1.39E+02
C - 14	2.08E+02	Cd - 113 m	9.64E+04	Cm - 242	5.22E+03
Cm - 243	2.33E+02	Cm - 244	3.05E+03	Co - 60	4.20E+05
Cs - 134	6.08E+06	Cs - 137	4.07E+06	Eu - 152	1.90E+04
Eu - 154	2.76E+06	Eu - 155	3.31E+06	H - 3	6.03E+05
I - 129	8.23E+02	Nb - 93 m	2.01E+04	Ni - 59	1.81E+03
Ni - 63	1.77E+05	Np - 237	8.16E+02	Pa - 231	5.98E+00
Pu - 238	1.23E+03	Pu - 239	4.34E+04	Pu - 240	6.12E+03
Pu - 241	2.40E+05	Pu - 242	7.69E-01	Ra - 226	1.52E+01
Ra - 228	4.77E+02	Ru - 106	1.18E+05	Sb - 125	2.93E+06
Se - 79	2.46E+03	Sm - 151	1.09E+07	Sn - 126	1.88E+03
Sr - 90	2.49E+07	Tc - 99	2.27E+05	Th - 229	5.14E+00
Th - 232	2.69E+01	U - 232	7.39E+02	U - 233	2.80E+03
U - 234	1.58E+03	U - 235	6.84E+01	U - 236	1.67E+01
U - 238	1.60E+03	Zr - 93	1.52E+04		

4) ISOTOPES- Present in IDF
The following isotopes could be found in the IDF but will contribute less than 0.1 mrem/yr. to the MEI, and represent less than 10% of the unabated PTE and less than 25% of the abated dose:

Ag-108m, Ag-110m, Am-242m, Ar-37, Ar-39, Ar-42
Au-195, Ba-133, Ba-140, Be-10, Be-7, Bi-207
Bk-247, Ca-41, Ca-45, Cd-109, Ce-141, Ce-144
Cf-249, Cf-250, Cf-251, Cf-252, Cl-36, Cm-245
Cm-246, Cm-247, Cm-248, Cm-250, Co-56, Co-57

Co-58, Cr-51, Cs-135, Cs-136, Es-254, Eu-150
Fe-55, Fe-59, Fe-60, Gd-152, Gd-153, Ge-68
Hf-175, Hf-181, Hg-203, I-125, K-40, Kr-85
Mn-54, Mo-93, Na-22, Nb-91, Nb-94, Nb-95
Nd-147, P-32, P-33, Pb-210, Pd-107, Pm-147
Po-210, Pu-236, Pu-244, Rb-83, Rb-84, Rb-86
Re-187, Ru-103, S-35, Sb-124, Sb-126, Sc-46
Se-75, Si-32, Sm-147, Sn-113, Sn-119m, Sn-121m
Sr-82, Sr-85, Sr-89, Ta-182, Te-121, Te-123
Te-125m, Te-127m, Te-129m, Th-228, Th-230, Th-234
Ti-44, Tl-204, Tm-170, V-49, W-185, Xe-131m
Y-88, Zn-65, Zr-95 (WAC 246-247-040(5) and WAC 246-247-060(5))

5) WASTE: Containerized and Disposed in Closed Containers.
All waste shall be containerized and disposed of in closed containers. If a vent is required it shall contain a filter with a minimum efficiency of 99.97% when tested with 0.3 micron particles. (WAC 246-247-040(5) and WAC 246-247-060(5)

6) TRACK: Annual Possession Quantity
The Annual Possession Quantity shall be tracked on a WDOH approved log. (WAC 246-247-040(5) and WAC 246-247-060(5))

7) CONDUCT MONTHLY: Radiological Contamination Surveys
Monthly radiological contamination surveys shall be conducted of the soil cover and perimeter of the pit to detect any spread of contamination. Any soil contamination detected shall be reported to WDOH. (WAC 246-247-040(5) and WAC 246-247-060(5))

8) USE of WATER for DUST SUPPRESSION
Water shall be used for dust suppression during the use of mobile cranes, dozers, and vibratory rollers, during placement and compaction of the cover soil. (WAC 246-247-040(5) and WAC 246-247-060(5))

9) FIXATIVES: Apply to contaminated soil and debris less than 24 hours
Fixatives shall be applied to contaminated soils and debris that will be left inactive less than 24 hours at the end of the work operations if the sustained wind speed is predicted during the next work shift is predicted to be equal to or greater than 20 mph. (WAC 246-247-040(5) and WAC 246-247-060(5))

10) FIXATIVES: Apply to contaminated soil and debris
Fixatives shall be applied to any contaminated soil and debris that will be inactive for more than 24 hours. (WAC 246-247-040(5) and WAC 246-247-060(5))

11) LIST and LOCATION OF Near Facility Monitors
Prior to receipt of radioactive material in the IDF facility a list and location of the near-facility monitors shall be provided to WDOH for review and approval. Power for a co-located ambient air sampler shall be provided for WDOH use at a monitoring station of WDOH choice. (WAC 246-247-040(5) , WAC 246-247-060(5)) and WAC 246-247-075(4))

Emission Unit ID: 1465

200 200-RCV-001

Cleaning Rad Contaminated Vehicles(Dif\Fug)

This is a MINOR, FUGITIVE, non-point source emission unit.

Miscellaneous Support Facilities

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-040(5) & WAC 246-247-060(5)	Hanford Site Near-Facility Environmental Ambient Monitoring Program	Alpha/Beta/Gamma	Per the sitewide ambient monitoring program, samples will be collected from the existing near-facility monitoring stations.

Sampling Requirements Radiological field surveys and near field monitoring

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Cleaning of radiologically contaminated vehicles on the Central Plateau.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Cleaning Radiologically Contaminated Vehicles (Replaced NOC 849)	AIR 17-118	1/9/2017	1073

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.40E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

cleaning Radiologically Contaminated Vehicles (RCVs) and/or radiologically contaminated components (e.g., radiator) of an RCV.

A portable, commercially available, high-pressure, water/steam cleaning unit could be deployed to the location of the RCV/component, or the RCV/component (after appropriate precautions to isolate and contain smearable contamination) could be moved to some other location in the 200 Areas plateau before cleaning. Cleaning may also involve brushing, scrubbing, or other manual methods conducted in a manner to minimize airborne dust.

A RCV/component could be isolated with an engineered shelter over a basin. The basin could be a collapsible liner for collection of waste water. The shelter could be a galvanized steel tube framework with arched trusses and covered with polyester sheeting. Alternatively, the activity could be conducted without a shelter over the basin (i.e., open air) with reasonable operational controls (e.g., directing water/steam cleaning stream downward, concentrating stream on RCVs or components, using lowest possible pressure settings) being implemented.

A portable high-pressure, commercially available, water/steam washing unit could be used to clean the

RCV/component. Personnel would direct the cleaning stream to areas of localized areas of contamination on the RCV/component. The RCV/component would be surveyed intermittently (e.g., hand-held field instruments, swipes, or dried sample analysis [for alpha] as necessary) to determine level of remaining contamination. This process would be repeated until sufficient decontamination is achieved, as determined by Radiation Protection personnel, to allow the RCV/component to be returned to service (i.e., no smearable contamination remains, and a fixed contamination level of no greater than 0.5 millirem/hour dose rate).

After decontamination to appropriate levels, the RCV/component would be removed from the shelter, if used, and basin. The RCV/component could be returned to service, or if necessary, appropriately packaged and disposed. Contaminated waste materials resulting from the cleaning processes, including waste water, will be packaged appropriately using standard procedures and dispositioned to approved storage or disposal. Activities could include solidification of liquid waste (such as absorbing liquids in tanks, containers; low-temperature [i.e., less than 100 degrees Celsius] evaporation) and subsequent transfer to appropriate on- or off site treatment/disposal facilities.

The shelter (if used) and basin would be surveyed at the end of the cleaning process to ensure appropriate radiological controls are in place. The shelter/basin would be decontaminated appropriately and maintained for future cleaning activities. If necessary, the shelter/basin could be packaged and disposed.

High-efficiency particulate air (HEPA) -filtered vacuums or portable/temporary radionuclide air emission units (PTRAEUs) may be used to support the cleaning activities.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.40E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.50E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Any radionuclide might be present in the RCV cleaning activities. Am-241 is representative of the alpha-emitting radionuclides present in/on the RCV/component and would be typical in the wastestream created.			
B/G - 0	2.90E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Beta/Gamma release based on Cs-137. Any radionuclide might be present in the RCV cleaning activities. Cs-137 is representative of the beta-gamma radionuclides present in/on the RCV/component and would be typical in the wastestream created.			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) CONTAMINATION CONTROL-PTREAU/HEPA Vac Use Authorized
If a portable/temporary radioactive air emission unit (PTRAEU) or HEPA filtered vacuum is used, controls as described in the sitewide NOC, (i.e., DOE/RL-96-75 or DOE/RL-97-50), and in the associated license would be followed. (WAC 246-247-040(5) and WAC 246-247-060(5))

5) CONTAMINATION CONTROL-Follow RWP
The cleaning operations shall be performed in accordance with the controls specified in a radiation work permit (RWP) and/or operating procedures. (WAC 246-247-040(5) and WAC 246-247-060(5))

6) CONTAMINATION CONTROL-Routine Field Surveys Required
All activities shall be conducted under the auspices of radiological control technicians. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used to contain contamination. (WAC 246-247-040(5) and WAC 246-247-060(5))

7) CONTAMINATION CONTROL-Spill Prevention Required
Appropriate spill prevention procedures shall be in place to minimize the probability of a release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills. (WAC 246-247-040(5) and WAC 246-247-060(5))

8) WDOH NOTIFICATION-Limits on Contamination
Low risk radiological activities (i.e., less than or equal to 100,000 dpm/100 cm^2 beta-gamma and less than or equal to 2,000 dpm/100 cm^2 alpha) will be completed under this NOC implementing the following controls:

-- Pre and post-job surveys will be performed and maintained as records of low emissions.
-- A basin will be erected to contain radioactive contamination.
-- Splashguards will be installed to contain spray water, and ensure waste water is directed toward and collected in the basin.
-- All radioactive contamination removed during the decontamination process shall be contained, packaged, or disposed of within the same day.
-- The basin surfaces shall be maintained to less than 1,000 dpm/100 cm^2 beta-gamma and 20 dpm/100cm^2 alpha when not in use.

For those activities considered medium risk radiological activities (i.e., greater than 100,000 dpm/100 cm2 to less than or equal to 1,000,000 dpm/cm2 beta-gamma and greater than 2,000 dpm/100 cm2 to less than or equal to 20,000 dpm/cm2 alpha), DOE will contact WDOH to discuss the additional controls that will be implemented for limiting radiological air emissions.

This NOC will not be used for high risk radiological activities. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 1471

200E P-202A Tunnel #1-001

202A Tunnel #1-001

This is a MAJOR, PASSIVELY ventilated emission unit.

PUREX

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	High Efficiency Particulate Air (HEPA) Filter	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075 & 40 CFR 61.107(a)	40 CFR 61, Appendix B Method 114	Gross Alpha Beta and composit analyzed for Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241, and Am-241.	Daily smears and final composit of filter samples for analysis.

Sampling Requirements Daily smears will be taken on the outside of the HEPA filters to verify the control of contamination. Destructive analysis of HEPA filter

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for PUREX Tunnel 1 involve stabilization to prevent further collapse on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
PUREX Tunnel 1 Stabilization Activities HEPA 001	AIR 17-904	9/6/2017	1262

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.44E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   This approval also extends to one time construction and stabilization activities associated with the PUREX Tunnel 1 Stabilization Project. There are eight railcars containing contaminated wastes in storage in the Tunnel. The first railcar was placed into storage in June 1960 with the last railcar placed into storage in January 1965. The total Tunnel activity at the time of the storage of the last railcar was 87,800 Ci. As of March 2003 the activity levels had decayed to 29,400 Ci. The process proposed for the structural stabilization of the Tunnel is filling the tunnel from to the maximum extent possible with grout. The grout characteristics (e.g., compressive strength, flow characteristics, cure time, water resistance, etc.) can be altered depending on the application. For the structural stabilization of the Tunnel, the use of the grout does not preclude any future final remediation activities.

   The stabilization of the Tunnel will be performed using existing penetrations (left in place and capped from previous tunnel integrity assessments), and installing new penetrations through the wooden wall and roof structures. Fill ports, exhaust ports and instrumentation ports will be installed to allow the grout to be placed into the Tunnel void space in layers or lifts. The filling of the void space in layers is designed such that the containers and railcars remain stationary, manage the heat generation associated with the curing of the grout and control the displaced air volume through the abatement system(s). The grout is expected to seal the

existing and new penetrations, however in the event this does not occur, other sealing options will be employed (e.g., mechanical sealing devices and methods). The stabilization activity is anticipated to last less than 120 calendar days which allows for the grout to cure adequately between lifts.

EU 1471, 202A Tunnel #1-001 will become active upon acceptance of this license by USDOE.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.44E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	4.42E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	1.00E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	5.92E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239	2.64E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	1.51E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	1.98E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 242	5.50E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sr - 90	8.31E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Cs - 137	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242	Sr - 90		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) WDOH ALTERNATE APPROVAL- Near Facility Monitoring Data Trending

The near facility monitoring network data for stations N969, N970, N977, N978 and N985 will be trended upon receipt of the bi-weekly sample data until the stabilization activity is completed to verify continued low diffuse and fugitive emissions from the stabilization activity. (WAC 246-247-075(4))

5) WDOH ALTERNATE APPROVAL- Daily Monitoring

At least daily (at least once per calendar day for each activated license for the duration of the activity), smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. (WAC 246-247-075 (4))

6) EMISSION UNIT CLOSURE

At the conclusion of stabilization activities, this license will be closed and de-registered as a point source emission unit via a letter from DOE to WDOH. The PUREX Tunnel 1 will remain as a diffuse and fugitive emission source

listed on Table 2-1 of the FF-01 license. (WAC 246-247-080(6))

7) WDOH ALTERNATE APPROVAL-Continuous Monitoring

An alternate monitoring methodology with periodic verification of controls is proposed due to the passive nature of the emission control devices (non-powered HEPA filters). Passive point source HEPA filters exhausting to the ambient air will be installed on the Tunnel as a temporary abatement system for structural stabilization work. The potential unabated offsite dose associated with the stabilization activities is calculated to be greater than 0.1 mrem/yr (Table 3). At least daily or upon completion of the stabilization activity, smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. If removable contamination is found above 20 dpm/100cm2 alpha or 1,000 dpm/100cm2 beta/gamma on the exterior of the HEPA filter or the grout fill piping, the source of the contamination will be investigated and corrected. (WAC 246-247-075 (4))

8) EMERGENCY PLANNING

The planning for any proposed new construction or significant modification of the emission unit must address accidental releases that have a probability of occurrence during the expected life of the emission unit of greater than one percent. The subsidence in the Tunnel demonstrates that the probability of occurrence is greater than one percent, therefore in the event of any future form of collapse or accident scenario, a graded approach will be taken if an event occurs during the stabilization activities. DOE Order 151.1C Comprehensive Emergency Management System outlines the Emergency Preparedness Program and framework used by DOE for the notifications and response actions that occur on the Hanford Site. The DOE stabilization Contractor emergency response processes align with the DOE document and shall be followed in the manner as those followed during the Tunnel subsidence event. (WAC 246-247-075(11))

9) WDOH ALTERNATIVE APPROVAL-HEPA Filter Analysis

Destructive analysis of the HEPA filters as the alternate monitoring methodology where the Laboratory analyzes a core sample taken from each individual filter used during the stabilization activity. The contract laboratory procedure(s) or detailed instructions provided by the Contractor will be used by the laboratory to perform the core sampling. The filter coupons will be analyzed individually at the end the stabilization activity for gross alpha and gross beta/gamma (GAB) and the results summed to obtain a total GAB result for the stabilization activity. After the GAB analysis is completed, the coupons will be composited for isotopic analysis (Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241 and Am-241). (WAC 246-247-075(4))

10) EMISSION UNITS IDENTIFICATION

The emission unit shall be clearly labeled by Emission Unit ID and AEI ID number at the filter.

11) REQUIRED LOG

A daily log to record the results of the smears of the HEPA filters will be maintained at the work site for review by WDOH. The following information is required:

1. Date and time of smear
2. Instrument type(s) and serial number(s)
3. Background
4. Smear result
5. Action Level
6. Supervisor review signature
7. Corrective action(s) taken (if needed).

(WAC 246-247-040(5))

Emission Unit ID: 1472

200E P-202A Tunnel #1-002

202A Tunnel #1-002

This is a MAJOR, PASSIVELY ventilated emission unit.

PUREX

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	High Efficiency Particulate Air (HEPA) Filter	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075 & 40 CFR 61.107(a)	40 CFR 61, Appendix B Method 114	Gross Alpha Beta and composit analyzed for Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241, and Am-241.	Daily smears and final composit of filter samples for analysis.

Sampling Requirements Daily smears will be taken on the outside of the HEPA filters to verify the control of contamination. Destructive analysis of HEPA filter

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for PUREX Tunnel 1 involve stabilization to prevent further collapse on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
PUREX Tunnel 1 Stabilization Activities HEPA 002	AIR 17-905	9/6/2017	1263

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.44E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   This approval also extends to one time construction and stabilization activities associated with the PUREX Tunnel 1 Stabilization Project. There are eight railcars containing contaminated wastes in storage in the Tunnel. The first railcar was placed into storage in June 1960 with the last railcar placed into storage in January 1965. The total Tunnel activity at the time of the storage of the last railcar was 87,800 Ci. As of March 2003 the activity levels had decayed to 29,400 Ci. The process proposed for the structural stabilization of the Tunnel is filling the tunnel from to the maximum extent possible with grout. The grout characteristics (e.g., compressive strength, flow characteristics, cure time, water resistance, etc.) can be altered depending on the application. For the structural stabilization of the Tunnel, the use of the grout does not preclude any future final remediation activities.

   The stabilization of the Tunnel will be performed using existing penetrations (left in place and capped from previous tunnel integrity assessments), and installing new penetrations through the wooden wall and roof structures. Fill ports, exhaust ports and instrumentation ports will be installed to allow the grout to be placed into the Tunnel void space in layers or lifts. The filling of the void space in layers is designed such that the containers and railcars remain stationary, manage the heat generation associated with the curing of the grout and control the displaced air volume through the abatement system(s). The grout is expected to seal the

existing and new penetrations, however in the event this does not occur, other sealing options will be employed (e.g., mechanical sealing devices and methods). The stabilization activity is anticipated to last less than 120 calendar days which allows for the grout to cure adequately between lifts.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.44E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	4.42E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	1.00E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	5.92E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239	2.64E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	1.51E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	1.98E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 242	5.50E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sr - 90	8.31E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Cs - 137	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242	Sr - 90		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) WDOH ALTERNATE APPROVAL- Near Facility Monitoring Data Trending

The near facility monitoring network data for stations N969, N970, N977, N978 and N985 will be trended upon receipt of the bi-weekly sample data until the stabilization activity is completed to verify continued low diffuse and fugitive emissions from the stabilization activity. (WAC 246-247-075(4))

5) WDOH ALTERNATE APPROVAL- Daily Monitoring

At least daily (at least once per calendar day for each activated license for the duration of the activity), smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. (WAC 246-247-075 (4))

6) EMISSION UNIT CLOSURE

At the conclusion of stabilization activities, if activated, this license will be closed and de-registered as a point source emission unit via a letter from DOE to WDOH. The PUREX Tunnel 1 will remain as a diffuse and fugitive emission source listed on Table 2-1 of the FF-01 license. (WAC 246-247-080(6))

7) WDOH ALTERNATE APPROVAL-Continuous Monitoring

An alternate monitoring methodology with periodic verification of controls is proposed due to the passive nature of the emission control devices (non-powered HEPA filters). Passive point source HEPA filters exhausting to the ambient air will be installed on the Tunnel as a temporary abatement system for structural stabilization work. The potential unabated offsite dose associated with the stabilization activities is calculated to be greater than 0.1 mrem/yr (Table 3). At least daily or upon completion of the stabilization activity, smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. If removable contamination is found above 20 dpm/100cm2 alpha or 1,000 dpm/100cm2 beta/gamma on the exterior of the HEPA filter or the grout fill piping, the source of the contamination will be investigated and corrected. (WAC 246-247-075 (4))

8) EMERGENCY PLANNING

The planning for any proposed new construction or significant modification of the emission unit must address accidental releases that have a probability of occurrence during the expected life of the emission unit of greater than one percent. The subsidence in the Tunnel demonstrates that the probability of occurrence is greater than one percent, therefore in the event of any future form of collapse or accident scenario, a graded approach will be taken if an event occurs during the stabilization activities. DOE Order 151.1C Comprehensive Emergency Management System outlines the Emergency Preparedness Program and framework used by DOE for the notifications and response actions that occur on the Hanford Site. The DOE stabilization Contractor emergency response processes align with the DOE document and shall be followed in the manner as those followed during the Tunnel subsidence event. (WAC 246-247-075(11))

9) WDOH ALTERNATIVE APPROVAL-HEPA Filter Analysis

Destructive analysis of the HEPA filters as the alternate monitoring methodology where the Laboratory analyzes a core sample taken from each individual filter used during the stabilization activity. The contract laboratory procedure(s) or detailed instructions provided by the Contractor will be used by the laboratory to perform the core sampling. The filter coupons will be analyzed individually at the end the stabilization activity for gross alpha and gross beta/gamma (GAB) and the results summed to obtain a total GAB result for the stabilization activity. After the GAB analysis is completed, the coupons will be composited for isotopic analysis (Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241 and Am-241). (WAC 246-247-075(4))

10) EMISSION UNITS IDENTIFICATION

The emission unit shall be clearly labeled by Emission Unit ID and AEI ID number at the filter.

11) REQUIRED LOG

A daily log to record the results of the smears of the HEPA filters will be maintained at the work site for review by WDOH. The following information is required:

1. Date and time of smear
2. Instrument type(s) and serial number(s)
3. Background
4. Smear result
5. Action Level
6. Supervisor review signature
7. Corrective action(s) taken (if needed).

(WAC 246-247-040(5))

12) WDOH ALTERNATIVE APPROVAL – Startup notification

Activation of this license requires a that a request for approval be made to the Department (verbal followed by email confirmation) and approval by the Department (verbal followed by email confirmation) prior to use. (WAC 246-247-002)

Emission Unit ID: 1473

200E P-202A Tunnel #1-003

202A Tunnel #1-003

This is a MAJOR, PASSIVELY ventilated emission unit.

PUREX

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	High Efficiency Particulate Air (HEPA) Filter	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075 & 40 CFR 61.107(a)	40 CFR 61, Appendix B Method 114	Gross Alpha Beta and composit analyzed for Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241, and Am-241.	Daily smears and final composit of filter samples for analysis.

Sampling Requirements Daily smears will be taken on the outside of the HEPA filters to verify the control of contamination. Destructive analysis of HEPA filter

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for PUREX Tunnel 1 involve stabilization to prevent further collapse on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
PUREX Tunnel 1 Stabilization Activities HEPA 003	AIR 17-906	9/6/2017	1264

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.44E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   This approval also extends to one time construction and stabilization activities associated with the PUREX Tunnel 1 Stabilization Project. There are eight railcars containing contaminated wastes in storage in the Tunnel. The first railcar was placed into storage in June 1960 with the last railcar placed into storage in January 1965. The total Tunnel activity at the time of the storage of the last railcar was 87,800 Ci. As of March 2003 the activity levels had decayed to 29,400 Ci. The process proposed for the structural stabilization of the Tunnel is filling the tunnel from to the maximum extent possible with grout. The grout characteristics (e.g., compressive strength, flow characteristics, cure time, water resistance, etc.) can be altered depending on the application. For the structural stabilization of the Tunnel, the use of the grout does not preclude any future final remediation activities.

   The stabilization of the Tunnel will be performed using existing penetrations (left in place and capped from previous tunnel integrity assessments), and installing new penetrations through the wooden wall and roof structures. Fill ports, exhaust ports and instrumentation ports will be installed to allow the grout to be placed into the Tunnel void space in layers or lifts. The filling of the void space in layers is designed such that the containers and railcars remain stationary, manage the heat generation associated with the curing of the grout and control the displaced air volume through the abatement system(s). The grout is expected to seal the

existing and new penetrations, however in the event this does not occur, other sealing options will be employed (e.g., mechanical sealing devices and methods). The stabilization activity is anticipated to last less than 120 calendar days which allows for the grout to cure adequately between lifts.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.44E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	4.42E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	1.00E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	5.92E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239	2.64E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	1.51E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	1.98E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 242	5.50E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sr - 90	8.31E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Cs - 137	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242	Sr - 90		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) EMISSION UNITS IDENTIFICATION

The emission unit shall be clearly labeled by Emission Unit ID and AEI ID number at the filter.

5) WDOH ALTERNATE APPROVAL- Near Facility Monitoring Data Trending

The near facility monitoring network data for stations N969, N970, N977, N978 and N985 will be trended upon receipt of the bi-weekly sample data until the stabilization activity is completed to verify continued low diffuse and fugitive emissions from the stabilization activity. (WAC 246-247-075(4))

6) WDOH ALTERNATE APPROVAL-Continuous Monitoring

An alternate monitoring methodology with periodic verification of controls is proposed due to the passive nature of the emission control devices (non-powered HEPA filters). Passive point source HEPA filters exhausting to the ambient air will be installed on the Tunnel as a temporary abatement system for structural stabilization work. The potential unabated offsite dose associated with the stabilization activities is calculated to be greater than 0.1 mrem/yr (Table 3). At least daily or upon completion of the stabilization activity, smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed.

If removable contamination is found above 20 dpm/100cm2 alpha or 1,000 dpm/100cm2 beta/gamma on the exterior of the HEPA filter or the grout fill piping, the source of the contamination will be investigated and corrected. (WAC 246-247-075 (4))

7) EMERGENCY PLANNING

The planning for any proposed new construction or significant modification of the emission unit must address accidental releases that have a probability of occurrence during the expected life of the emission unit of greater than one percent. The subsidence in the Tunnel demonstrates that the probability of occurrence is greater than one percent, therefore in the event of any future form of collapse or accident scenario, a graded approach will be taken if an event occurs during the stabilization activities. DOE Order 151.1C Comprehensive Emergency Management System outlines the Emergency Preparedness Program and framework used by DOE for the notifications and response actions that occur on the Hanford Site. The DOE stabilization Contractor emergency response processes align with the DOE document and shall be followed in the manner as those followed during the Tunnel subsidence event. (WAC 246-247-075(11))

8) WDOH ALTERNATIVE APPROVAL-HEPA Filter Analysis

Destructive analysis of the HEPA filters as the alternate monitoring methodology where the Laboratory analyzes a core sample taken from each individual filter used during the stabilization activity. The contract laboratory procedure(s) or detailed instructions provided by the Contractor will be used by the laboratory to perform the core sampling. The filter coupons will be analyzed individually at the end the stabilization activity for gross alpha and gross beta/gamma (GAB) and the results summed to obtain a total GAB result for the stabilization activity. After the GAB analysis is completed, the coupons will be composited for isotopic analysis (Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241 and Am-241). (WAC 246-247-075(4))

9) WDOH ALTERNATE APPROVAL- Daily Monitoring

At least daily (at least once per calendar day for each activated license for the duration of the activity), smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. (WAC 246-247-075 (4))

10) EMISSION UNIT CLOSURE

At the conclusion of stabilization activities, if activated, this license will be closed and de-registered as a point source emission unit via a letter from DOE to WDOH. The PUREX Tunnel 1 will remain as a diffuse and fugitive emission source listed on Table 2-1 of the FF-01 license. (WAC 246-247-080(6))

11) WDOH ALTERNATIVE APPROVAL – Startup notification

Activation of this license requires a that a request for approval be made to the Department (verbal followed by email confirmation) and approval by the Department (verbal followed by email confirmation) prior to use. (WAC 246-247-002)

12) REQUIRED LOG

A daily log to record the results of the smears of the HEPA filters will be maintained at the work site for review by WDOH. The following information is required:

1. Date and time of smear
2. Instrument type(s) and serial number(s)
3. Background
4. Smear result
5. Action Level
6. Supervisor review signature
7. Corrective action(s) taken (if needed).

(WAC 246-247-040(5))

Emission Unit ID: 1474

200E P-202A Tunnel #1-004

202A Tunnel #1-004

This is a MAJOR, PASSIVELY ventilated emission unit.

PUREX

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	High Efficiency Particulate Air (HEPA) Filter	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075 & 40 CFR 61.107(a)	40 CFR 61, Appendix B Method 114	Gross Alpha Beta and composit analyzed for Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241, and Am-241.	Daily smears and final composit of filter samples for analysis.

Sampling Requirements Daily smears will be taken on the outside of the HEPA filters to verify the control of contamination. Destructive analysis of HEPA filter

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for PUREX Tunnel 1 involve stabilization to prevent further collapse on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
PUREX Tunnel 1 Stabilization Activities HEPA 004	AIR 17-907	9/6/2017	1265

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.44E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   This approval also extends to one time construction and stabilization activities associated with the PUREX Tunnel 1 Stabilization Project. There are eight railcars containing contaminated wastes in storage in the Tunnel. The first railcar was placed into storage in June 1960 with the last railcar placed into storage in January 1965. The total Tunnel activity at the time of the storage of the last railcar was 87,800 Ci. As of March 2003 the activity levels had decayed to 29,400 Ci. The process proposed for the structural stabilization of the Tunnel is filling the tunnel from to the maximum extent possible with grout. The grout characteristics (e.g., compressive strength, flow characteristics, cure time, water resistance, etc.) can be altered depending on the application. For the structural stabilization of the Tunnel, the use of the grout does not preclude any future final remediation activities.

   The stabilization of the Tunnel will be performed using existing penetrations (left in place and capped from previous tunnel integrity assessments), and installing new penetrations through the wooden wall and roof structures. Fill ports, exhaust ports and instrumentation ports will be installed to allow the grout to be placed into the Tunnel void space in layers or lifts. The filling of the void space in layers is designed such that the containers and railcars remain stationary, manage the heat generation associated with the curing of the grout and control the displaced air volume through the abatement system(s). The grout is expected to seal the

existing and new penetrations, however in the event this does not occur, other sealing options will be employed (e.g., mechanical sealing devices and methods). The stabilization activity is anticipated to last less than 120 calendar days which allows for the grout to cure adequately between lifts.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.44E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	4.42E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	1.00E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	5.92E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239	2.64E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	1.51E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	1.98E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 242	5.50E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sr - 90	8.31E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Cs - 137	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242	Sr - 90		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) WDOH ALTERNATIVE APPROVAL-HEPA Filter Analysis

Destructive analysis of the HEPA filters as the alternate monitoring methodology where the Laboratory analyzes a core sample taken from each individual filter used during the stabilization activity. The contract laboratory procedure(s) or detailed instructions provided by the Contractor will be used by the laboratory to perform the core sampling. The filter coupons will be analyzed individually at the end the stabilization activity for gross alpha and gross beta/gamma (GAB) and the results summed to obtain a total GAB result for the stabilization activity. After the GAB analysis is completed, the coupons will be composited for isotopic analysis (Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241 and Am-241). (WAC 246-247-075(4))

5) EMISSION UNITS IDENTIFICATION

The emission unit shall be clearly labeled by Emission Unit ID and AEI ID number at the filter.

6) WDOH ALTERNATE APPROVAL- Near Facility Monitoring Data Trending

The near facility monitoring network data for stations N969, N970, N977, N978 and N985 will be trended upon receipt of the bi-weekly sample data until the stabilization activity is completed to verify continued low diffuse and fugitive emissions from the stabilization activity. (WAC 246-247-075(4))

7) WDOH ALTERNATE APPROVAL- Daily Monitoring

At least daily (at least once per calendar day for each activated license for the duration of the activity), smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. (WAC 246-247-075 (4))

8) EMISSION UNIT CLOSURE

At the conclusion of stabilization activities, if activated, this license will be closed and de-registered as a point source emission unit via a letter from DOE to WDOH. The PUREX Tunnel 1 will remain as a diffuse and fugitive emission source listed on Table 2-1 of the FF-01 license. (WAC 246-247-080(6))

9) WDOH ALTERNATE APPROVAL-Continuous Monitoring

An alternate monitoring methodology with periodic verification of controls is proposed due to the passive nature of the emission control devices (non-powered HEPA filters). Passive point source HEPA filters exhausting to the ambient air will be installed on the Tunnel as a temporary abatement system for structural stabilization work. The potential unabated offsite dose associated with the stabilization activities is calculated to be greater than 0.1 mrem/yr (Table 3). At least daily or upon completion of the stabilization activity, smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. If removable contamination is found above 20 dpm/100cm2 alpha or 1,000 dpm/100cm2 beta/gamma on the exterior of the HEPA filter or the grout fill piping, the source of the contamination will be investigated and corrected. (WAC 246-247-075 (4))

10) EMERGENCY PLANNING

The planning for any proposed new construction or significant modification of the emission unit must address accidental releases that have a probability of occurrence during the expected life of the emission unit of greater than one percent. The subsidence in the Tunnel demonstrates that the probability of occurrence is greater than one percent, therefore in the event of any future form of collapse or accident scenario, a graded approach will be taken if an event occurs during the stabilization activities. DOE Order 151.1C Comprehensive Emergency Management System outlines the Emergency Preparedness Program and framework used by DOE for the notifications and response actions that occur on the Hanford Site. The DOE stabilization Contractor emergency response processes align with the DOE document and shall be followed in the manner as those followed during the Tunnel subsidence event. (WAC 246-247-075(11))

11) WDOH ALTERNATIVE APPROVAL – Startup notification

Activation of this license requires a that a request for approval be made to the Department (verbal followed by email confirmation) and approval by the Department (verbal followed by email confirmation) prior to use. (WAC 246-247-002)

12) REQUIRED LOG

A daily log to record the results of the smears of the HEPA filters will be maintained at the work site for review by WDOH. The following information is required:

1. Date and time of smear
2. Instrument type(s) and serial number(s)
3. Background
4. Smear result
5. Action Level
6. Supervisor review signature
7. Corrective action(s) taken (if needed).

(WAC 246-247-040(5))

Emission Unit ID: 1475

200E P-202A Tunnel #1-005

202A Tunnel #1-005

This is a MAJOR, PASSIVELY ventilated emission unit.

PUREX

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	High Efficiency Particulate Air (HEPA) Filter	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075 & 40 CFR 61.107(a)	40 CFR 61, Appendix B Method 114	Gross Alpha Beta and composit analyzed for Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241, and Am-241.	Daily smears and final composit of filter samples for analysis.

Sampling Requirements Daily smears will be taken on the outside of the HEPA filters to verify the control of contamination. Destructive analysis of HEPA filter

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for PUREX Tunnel 1 involve stabilization to prevent further collapse on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
PUREX Tunnel 1 Stabilization Activities HEPA 005	AIR 17-908	9/6/2017	1266

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.44E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   This approval also extends to one time construction and stabilization activities associated with the PUREX Tunnel 1 Stabilization Project. There are eight railcars containing contaminated wastes in storage in the Tunnel. The first railcar was placed into storage in June 1960 with the last railcar placed into storage in January 1965. The total Tunnel activity at the time of the storage of the last railcar was 87,800 Ci. As of March 2003 the activity levels had decayed to 29,400 Ci. The process proposed for the structural stabilization of the Tunnel is filling the tunnel from to the maximum extent possible with grout. The grout characteristics (e.g., compressive strength, flow characteristics, cure time, water resistance, etc.) can be altered depending on the application. For the structural stabilization of the Tunnel, the use of the grout does not preclude any future final remediation activities.

   The stabilization of the Tunnel will be performed using existing penetrations (left in place and capped from previous tunnel integrity assessments), and installing new penetrations through the wooden wall and roof structures. Fill ports, exhaust ports and instrumentation ports will be installed to allow the grout to be placed into the Tunnel void space in layers or lifts. The filling of the void space in layers is designed such that the containers and railcars remain stationary, manage the heat generation associated with the curing of the grout and control the displaced air volume through the abatement system(s). The grout is expected to seal the

existing and new penetrations, however in the event this does not occur, other sealing options will be employed (e.g., mechanical sealing devices and methods). The stabilization activity is anticipated to last less than 120 calendar days which allows for the grout to cure adequately between lifts.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.44E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	4.42E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	1.00E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	5.92E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239	2.64E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	1.51E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	1.98E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 242	5.50E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sr - 90	8.31E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Cs - 137	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242	Sr - 90		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) REQUIRED LOG

A daily log to record the results of the smears of the HEPA filters will be maintained at the work site for review by WDOH. The following information is required:

1. Date and time of smear
2. Instrument type(s) and serial number(s)
3. Background
4. Smear result
5. Action Level
6. Supervisor review signature
7. Corrective action(s) taken (if needed).

(WAC 246-247-040(5))

5) EMISSION UNIT CLOSURE

At the conclusion of stabilization activities, if activated, this license will be closed and de-registered as a point source emission unit via a letter from DOE to WDOH. The PUREX Tunnel 1 will remain as a diffuse and fugitive emission source listed on Table 2-1 of the FF-01 license. (WAC 246-247-080(6))

6) WDOH ALTERNATE APPROVAL-Continuous Monitoring

An alternate monitoring methodology with periodic verification of controls is proposed due to the passive nature of the emission control devices (non-powered HEPA filters). Passive point source HEPA filters exhausting to the ambient air will be installed on the Tunnel as a temporary abatement system for structural stabilization work. The potential unabated offsite dose associated with the stabilization activities is calculated to be greater than 0.1 mrem/yr (Table 3). At least daily or upon completion of the stabilization activity, smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. If removable contamination is found above 20 dpm/100cm2 alpha or 1,000 dpm/100cm2 beta/gamma on the exterior of the HEPA filter or the grout fill piping, the source of the contamination will be investigated and corrected. (WAC 246-247-075 (4))

7) EMERGENCY PLANNING

The planning for any proposed new construction or significant modification of the emission unit must address accidental releases that have a probability of occurrence during the expected life of the emission unit of greater than one percent. The subsidence in the Tunnel demonstrates that the probability of occurrence is greater than one percent, therefore in the event of any future form of collapse or accident scenario, a graded approach will be taken if an event occurs during the stabilization activities. DOE Order 151.1C Comprehensive Emergency Management System outlines the Emergency Preparedness Program and framework used by DOE for the notifications and response actions that occur on the Hanford Site. The DOE stabilization Contractor emergency response processes align with the DOE document and shall be followed in the manner as those followed during the Tunnel subsidence event. (WAC 246-247-075(11))

8) EMISSION UNITS IDENTIFICATION

The emission unit shall be clearly labeled by Emission Unit ID and AEI ID number at the filter.

9) WDOH ALTERNATIVE APPROVAL-HEPA Filter Analysis

Destructive analysis of the HEPA filters as the alternate monitoring methodology where the Laboratory analyzes a core sample taken from each individual filter used during the stabilization activity. The contract laboratory procedure(s) or detailed instructions provided by the Contractor will be used by the laboratory to perform the core sampling. The filter coupons will be analyzed individually at the end the stabilization activity for gross alpha and gross beta/gamma (GAB) and the results summed to obtain a total GAB result for the stabilization activity. After the GAB analysis is completed, the coupons will be composited for isotopic analysis (Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241 and Am-241). (WAC 246-247-075(4))

10) WDOH ALTERNATE APPROVAL- Daily Monitoring

At least daily (at least once per calendar day for each activated license for the duration of the activity), smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. (WAC 246-247-075 (4))

11) WDOH ALTERNATE APPROVAL- Near Facility Monitoring Data Trending

The near facility monitoring network data for stations N969, N970, N977, N978 and N985 will be trended upon receipt of the bi-weekly sample data until the stabilization activity is completed to verify continued low diffuse and fugitive emissions from the stabilization activity. (WAC 246-247-075(4))

12) WDOH ALTERNATIVE APPROVAL – Startup notification

Activation of this license requires a that a request for approval be made to the Department (verbal followed by email confirmation) and approval by the Department (verbal followed by email confirmation) prior to use. (WAC 246-247-002)

Emission Unit ID: 1476

200E P-202A Tunnel #1-006

202A Tunnel #1-006

This is a MAJOR, PASSIVELY ventilated emission unit.

PUREX

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	High Efficiency Particulate Air (HEPA) Filter	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075 & 40 CFR 61.107(a)	40 CFR 61, Appendix B Method 114	Gross Alpha Beta and composit analyzed for Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241, and Am-241.	Daily smears and final composit of filter samples for analysis.

Sampling Requirements Daily smears will be taken on the outside of the HEPA filters to verify the control of contamination. Destructive analysis of HEPA filter

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for PUREX Tunnel 1 involve stabilization to prevent further collapse on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
PUREX Tunnel 1 Stabilization Activities HEPA 006	AIR 17-909	9/6/2017	1267

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.44E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   This approval also extends to one time construction and stabilization activities associated with the PUREX Tunnel 1 Stabilization Project. There are eight railcars containing contaminated wastes in storage in the Tunnel. The first railcar was placed into storage in June 1960 with the last railcar placed into storage in January 1965. The total Tunnel activity at the time of the storage of the last railcar was 87,800 Ci. As of March 2003 the activity levels had decayed to 29,400 Ci. The process proposed for the structural stabilization of the Tunnel is filling the tunnel from to the maximum extent possible with grout. The grout characteristics (e.g., compressive strength, flow characteristics, cure time, water resistance, etc.) can be altered depending on the application. For the structural stabilization of the Tunnel, the use of the grout does not preclude any future final remediation activities.

   The stabilization of the Tunnel will be performed using existing penetrations (left in place and capped from previous tunnel integrity assessments), and installing new penetrations through the wooden wall and roof structures. Fill ports, exhaust ports and instrumentation ports will be installed to allow the grout to be placed into the Tunnel void space in layers or lifts. The filling of the void space in layers is designed such that the containers and railcars remain stationary, manage the heat generation associated with the curing of the grout and control the displaced air volume through the abatement system(s). The grout is expected to seal the

existing and new penetrations, however in the event this does not occur, other sealing options will be employed (e.g., mechanical sealing devices and methods). The stabilization activity is anticipated to last less than 120 calendar days which allows for the grout to cure adequately between lifts.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.44E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	4.42E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	1.00E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	5.92E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239	2.64E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	1.51E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	1.98E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 242	5.50E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sr - 90	8.31E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Cs - 137	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242	Sr - 90		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) WDOH ALTERNATE APPROVAL-Continuous Monitoring

An alternate monitoring methodology with periodic verification of controls is proposed due to the passive nature of the emission control devices (non-powered HEPA filters). Passive point source HEPA filters exhausting to the ambient air will be installed on the Tunnel as a temporary abatement system for structural stabilization work. The potential unabated offsite dose associated with the stabilization activities is calculated to be greater than 0.1 mrem/yr (Table 3). At least daily or upon completion of the stabilization activity, smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. If removable contamination is found above 20 dpm/100cm2 alpha or 1,000 dpm/100cm2 beta/gamma on the exterior of the HEPA filter or the grout fill piping, the source of the contamination will be investigated and corrected. (WAC 246-247-075 (4))

5) EMERGENCY PLANNING

The planning for any proposed new construction or significant modification of the emission unit must address accidental releases that have a probability of occurrence during the expected life of the emission unit of greater than one percent. The subsidence in the Tunnel demonstrates that the probability of occurrence is greater than one percent, therefore in the event of any future form of collapse or accident scenario, a graded approach will be taken

if an event occurs during the stabilization activities. DOE Order 151.1C Comprehensive Emergency Management System outlines the Emergency Preparedness Program and framework used by DOE for the notifications and response actions that occur on the Hanford Site. The DOE stabilization Contractor emergency response processes align with the DOE document and shall be followed in the manner as those followed during the Tunnel subsidence event. (WAC 246-247-075(11))

6) EMISSION UNIT CLOSURE

At the conclusion of stabilization activities, if activated, this license will be closed and de-registered as a point source emission unit via a letter from DOE to WDOH. The PUREX Tunnel 1 will remain as a diffuse and fugitive emission source listed on Table 2-1 of the FF-01 license. (WAC 246-247-080(6))

7) WDOH ALTERNATE APPROVAL- Daily Monitoring

At least daily (at least once per calendar day for each activated license for the duration of the activity), smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. (WAC 246-247-075 (4))

8) WDOH ALTERNATIVE APPROVAL – Startup notification

Activation of this license requires a that a request for approval be made to the Department (verbal followed by email confirmation) and approval by the Department (verbal followed by email confirmation) prior to use. (WAC 246-247-002)

9) REQUIRED LOG

A daily log to record the results of the smears of the HEPA filters will be maintained at the work site for review by WDOH. The following information is required:

1. Date and time of smear
2. Instrument type(s) and serial number(s)
3. Background
4. Smear result
5. Action Level
6. Supervisor review signature
7. Corrective action(s) taken (if needed).

(WAC 246-247-040(5))

10) EMISSION UNITS IDENTIFICATION

The emission unit shall be clearly labeled by Emission Unit ID and AEI ID number at the filter.

11) WDOH ALTERNATIVE APPROVAL-HEPA Filter Analysis

Destructive analysis of the HEPA filters as the alternate monitoring methodology where the Laboratory analyzes a core sample taken from each individual filter used during the stabilization activity. The contract laboratory procedure(s) or detailed instructions provided by the Contractor will be used by the laboratory to perform the core sampling. The filter coupons will be analyzed individually at the end the stabilization activity for gross alpha and gross beta/gamma (GAB) and the results summed to obtain a total GAB result for the stabilization activity. After the GAB analysis is completed, the coupons will be composited for isotopic analysis (Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241 and Am-241). (WAC 246-247-075(4))

12) WDOH ALTERNATE APPROVAL- Near Facility Monitoring Data Trending

The near facility monitoring network data for stations N969, N970, N977, N978 and N985 will be trended upon receipt of the bi-weekly sample data until the stabilization activity is completed to verify continued low diffuse and fugitive emissions from the stabilization activity. (WAC 246-247-075(4))

Emission Unit ID: 1477

200E P-202A Tunnel #1-007

202A Tunnel #1-007

This is a MAJOR, PASSIVELY ventilated emission unit.

PUREX

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	High Efficiency Particulate Air (HEPA) Filter	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075 & 40 CFR 61.107(a)	40 CFR 61, Appendix B Method 114	Gross Alpha Beta and composit analyzed for Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241, and Am-241.	Daily smears and final composit of filter samples for analysis.

Sampling Requirements Daily smears will be taken on the outside of the HEPA filters to verify the control of contamination. Destructive analysis of HEPA filter

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for PUREX Tunnel 1 involve stabilization to prevent further collapse on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
PUREX Tunnel 1 Stabilization Activities HEPA 007	AIR 17-910	9/6/2017	1268

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.44E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   This approval also extends to one time construction and stabilization activities associated with the PUREX Tunnel 1 Stabilization Project. There are eight railcars containing contaminated wastes in storage in the Tunnel. The first railcar was placed into storage in June 1960 with the last railcar placed into storage in January 1965. The total Tunnel activity at the time of the storage of the last railcar was 87,800 Ci. As of March 2003 the activity levels had decayed to 29,400 Ci. The process proposed for the structural stabilization of the Tunnel is filling the tunnel from to the maximum extent possible with grout. The grout characteristics (e.g., compressive strength, flow characteristics, cure time, water resistance, etc.) can be altered depending on the application. For the structural stabilization of the Tunnel, the use of the grout does not preclude any future final remediation activities.

   The stabilization of the Tunnel will be performed using existing penetrations (left in place and capped from previous tunnel integrity assessments), and installing new penetrations through the wooden wall and roof structures. Fill ports, exhaust ports and instrumentation ports will be installed to allow the grout to be placed into the Tunnel void space in layers or lifts. The filling of the void space in layers is designed such that the containers and railcars remain stationary, manage the heat generation associated with the curing of the grout and control the displaced air volume through the abatement system(s). The grout is expected to seal the

existing and new penetrations, however in the event this does not occur, other sealing options will be employed (e.g., mechanical sealing devices and methods). The stabilization activity is anticipated to last less than 120 calendar days which allows for the grout to cure adequately between lifts.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.44E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	4.42E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	1.00E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	5.92E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239	2.64E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	1.51E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	1.98E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 242	5.50E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sr - 90	8.31E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Cs - 137	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242	Sr - 90		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) WDOH ALTERNATE APPROVAL- Daily Monitoring

At least daily (at least once per calendar day for each activated license for the duration of the activity), smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. (WAC 246-247-075 (4))

5) EMISSION UNIT CLOSURE

At the conclusion of stabilization activities, if activated, this license will be closed and de-registered as a point source emission unit via a letter from DOE to WDOH. The PUREX Tunnel 1 will remain as a diffuse and fugitive emission source listed on Table 2-1 of the FF-01 license. (WAC 246-247-080(6))

6) WDOH ALTERNATE APPROVAL-Continuous Monitoring

An alternate monitoring methodology with periodic verification of controls is proposed due to the passive nature of the emission control devices (non-powered HEPA filters). Passive point source HEPA filters exhausting to the ambient air will be installed on the Tunnel as a temporary abatement system for structural stabilization work. The potential unabated offsite dose associated with the stabilization activities is calculated to be greater than 0.1

mrem/yr (Table 3). At least daily or upon completion of the stabilization activity, smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. If removable contamination is found above 20 dpm/100cm2 alpha or 1,000 dpm/100cm2 beta/gamma on the exterior of the HEPA filter or the grout fill piping, the source of the contamination will be investigated and corrected. (WAC 246-247-075 (4))

7) EMERGENCY PLANNING

The planning for any proposed new construction or significant modification of the emission unit must address accidental releases that have a probability of occurrence during the expected life of the emission unit of greater than one percent. The subsidence in the Tunnel demonstrates that the probability of occurrence is greater than one percent, therefore in the event of any future form of collapse or accident scenario, a graded approach will be taken if an event occurs during the stabilization activities. DOE Order 151.1C Comprehensive Emergency Management System outlines the Emergency Preparedness Program and framework used by DOE for the notifications and response actions that occur on the Hanford Site. The DOE stabilization Contractor emergency response processes align with the DOE document and shall be followed in the manner as those followed during the Tunnel subsidence event. (WAC 246-247-075(11))

8) WDOH ALTERNATIVE APPROVAL-HEPA Filter Analysis

Destructive analysis of the HEPA filters as the alternate monitoring methodology where the Laboratory analyzes a core sample taken from each individual filter used during the stabilization activity. The contract laboratory procedure(s) or detailed instructions provided by the Contractor will be used by the laboratory to perform the core sampling. The filter coupons will be analyzed individually at the end the stabilization activity for gross alpha and gross beta/gamma (GAB) and the results summed to obtain a total GAB result for the stabilization activity. After the GAB analysis is completed, the coupons will be composited for isotopic analysis (Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241 and Am-241). (WAC 246-247-075(4))

9) EMISSION UNITS IDENTIFICATION

The emission unit shall be clearly labeled by Emission Unit ID and AEI ID number at the filter.

10) WDOH ALTERNATE APPROVAL- Near Facility Monitoring Data Trending

The near facility monitoring network data for stations N969, N970, N977, N978 and N985 will be trended upon receipt of the bi-weekly sample data until the stabilization activity is completed to verify continued low diffuse and fugitive emissions from the stabilization activity. (WAC 246-247-075(4))

11) WDOH ALTERNATIVE APPROVAL – Startup notification

Activation of this license requires a that a request for approval be made to the Department (verbal followed by email confirmation) and approval by the Department (verbal followed by email confirmation) prior to use. (WAC 246-247-002)

12) REQUIRED LOG

A daily log to record the results of the smears of the HEPA filters will be maintained at the work site for review by WDOH. The following information is required:

1. Date and time of smear
2. Instrument type(s) and serial number(s)
3. Background
4. Smear result
5. Action Level
6. Supervisor review signature
7. Corrective action(s) taken (if needed).

(WAC 246-247-040(5))

Emission Unit ID: 1478

200E P-202A Tunnel #1-008

202A Tunnel #1-008

This is a MAJOR, PASSIVELY ventilated emission unit.

PUREX

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	High Efficiency Particulate Air (HEPA) Filter	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075 & 40 CFR 61.107(a)	40 CFR 61, Appendix B Method 114	Gross Alpha Beta and composit analyzed for Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241, and Am-241.	Daily smears and final composit of filter samples for analysis.

Sampling Requirements Daily smears will be taken on the outside of the HEPA filters to verify the control of contamination. Destructive analysis of HEPA filter

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for PUREX Tunnel 1 involve stabilization to prevent further collapse on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
PUREX Tunnel 1 Stabilization Activities HEPA 008	AIR 17-911	9/6/2017	1269

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.44E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   This approval also extends to one time construction and stabilization activities associated with the PUREX Tunnel 1 Stabilization Project. There are eight railcars containing contaminated wastes in storage in the Tunnel. The first railcar was placed into storage in June 1960 with the last railcar placed into storage in January 1965. The total Tunnel activity at the time of the storage of the last railcar was 87,800 Ci. As of March 2003 the activity levels had decayed to 29,400 Ci. The process proposed for the structural stabilization of the Tunnel is filling the tunnel from to the maximum extent possible with grout. The grout characteristics (e.g., compressive strength, flow characteristics, cure time, water resistance, etc.) can be altered depending on the application. For the structural stabilization of the Tunnel, the use of the grout does not preclude any future final remediation activities.

   The stabilization of the Tunnel will be performed using existing penetrations (left in place and capped from previous tunnel integrity assessments), and installing new penetrations through the wooden wall and roof structures. Fill ports, exhaust ports and instrumentation ports will be installed to allow the grout to be placed into the Tunnel void space in layers or lifts. The filling of the void space in layers is designed such that the containers and railcars remain stationary, manage the heat generation associated with the curing of the grout and control the displaced air volume through the abatement system(s). The grout is expected to seal the

existing and new penetrations, however in the event this does not occur, other sealing options will be employed (e.g., mechanical sealing devices and methods). The stabilization activity is anticipated to last less than 120 calendar days which allows for the grout to cure adequately between lifts.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.44E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	4.42E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	1.00E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	5.92E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239	2.64E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	1.51E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	1.98E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 242	5.50E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sr - 90	8.31E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Cs - 137	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242	Sr - 90		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) REQUIRED LOG

A daily log to record the results of the smears of the HEPA filters will be maintained at the work site for review by WDOH. The following information is required:

1. Date and time of smear
2. Instrument type(s) and serial number(s)
3. Background
4. Smear result
5. Action Level
6. Supervisor review signature
7. Corrective action(s) taken (if needed).

(WAC 246-247-040(5))

5) WDOH ALTERNATE APPROVAL- Daily Monitoring

At least daily (at least once per calendar day for each activated license for the duration of the activity), smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing)

have been sealed. (WAC 246-247-075 (4))

6) EMISSION UNIT CLOSURE

At the conclusion of stabilization activities, if activated, this license will be closed and de-registered as a point source emission unit via a letter from DOE to WDOH. The PUREX Tunnel 1 will remain as a diffuse and fugitive emission source listed on Table 2-1 of the FF-01 license. (WAC 246-247-080(6))

7) WDOH ALTERNATE APPROVAL-Continuous Monitoring

An alternate monitoring methodology with periodic verification of controls is proposed due to the passive nature of the emission control devices (non-powered HEPA filters). Passive point source HEPA filters exhausting to the ambient air will be installed on the Tunnel as a temporary abatement system for structural stabilization work. The potential unabated offsite dose associated with the stabilization activities is calculated to be greater than 0.1 mrem/yr (Table 3). At least daily or upon completion of the stabilization activity, smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. If removable contamination is found above 20 dpm/100cm2 alpha or 1,000 dpm/100cm2 beta/gamma on the exterior of the HEPA filter or the grout fill piping, the source of the contamination will be investigated and corrected. (WAC 246-247-075 (4))

8) EMERGENCY PLANNING

The planning for any proposed new construction or significant modification of the emission unit must address accidental releases that have a probability of occurrence during the expected life of the emission unit of greater than one percent. The subsidence in the Tunnel demonstrates that the probability of occurrence is greater than one percent, therefore in the event of any future form of collapse or accident scenario, a graded approach will be taken if an event occurs during the stabilization activities. DOE Order 151.1C Comprehensive Emergency Management System outlines the Emergency Preparedness Program and framework used by DOE for the notifications and response actions that occur on the Hanford Site. The DOE stabilization Contractor emergency response processes align with the DOE document and shall be followed in the manner as those followed during the Tunnel subsidence event. (WAC 246-247-075(11))

9) WDOH ALTERNATIVE APPROVAL-HEPA Filter Analysis

Destructive analysis of the HEPA filters as the alternate monitoring methodology where the Laboratory analyzes a core sample taken from each individual filter used during the stabilization activity. The contract laboratory procedure(s) or detailed instructions provided by the Contractor will be used by the laboratory to perform the core sampling. The filter coupons will be analyzed individually at the end the stabilization activity for gross alpha and gross beta/gamma (GAB) and the results summed to obtain a total GAB result for the stabilization activity. After the GAB analysis is completed, the coupons will be composited for isotopic analysis (Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241 and Am-241). (WAC 246-247-075(4))

10) EMISSION UNITS IDENTIFICATION

The emission unit shall be clearly labeled by Emission Unit ID and AEI ID number at the filter.

11) WDOH ALTERNATE APPROVAL- Near Facility Monitoring Data Trending

The near facility monitoring network data for stations N969, N970, N977, N978 and N985 will be trended upon receipt of the bi-weekly sample data until the stabilization activity is completed to verify continued low diffuse and fugitive emissions from the stabilization activity. (WAC 246-247-075(4))

12) WDOH ALTERNATIVE APPROVAL – Startup notification

Activation of this license requires a that a request for approval be made to the Department (verbal followed by email confirmation) and approval by the Department (verbal followed by email confirmation) prior to use. (WAC 246-247-002)

Emission Unit ID: 1479

200E P-202A Tunnel #1-009

202A Tunnel #1-009

This is a MAJOR, PASSIVELY ventilated emission unit.

PUREX

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	High Efficiency Particulate Air (HEPA) Filter	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075 & 40 CFR 61.107(a)	40 CFR 61, Appendix B Method 114	Gross Alpha Beta and composit analyzed for Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241, and Am-241.	Daily smears and final composit of filter samples for analysis.

Sampling Requirements Daily smears will be taken on the outside of the HEPA filters to verify the control of contamination. Destructive analysis of HEPA filter

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for PUREX Tunnel 1 involve stabilization to prevent further collapse on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
PUREX Tunnel 1 Stabilization Activities HEPA 009	AIR 17-912	9/6/2017	1270

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.44E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   This approval also extends to one time construction and stabilization activities associated with the PUREX Tunnel 1 Stabilization Project. There are eight railcars containing contaminated wastes in storage in the Tunnel. The first railcar was placed into storage in June 1960 with the last railcar placed into storage in January 1965. The total Tunnel activity at the time of the storage of the last railcar was 87,800 Ci. As of March 2003 the activity levels had decayed to 29,400 Ci. The process proposed for the structural stabilization of the Tunnel is filling the tunnel from to the maximum extent possible with grout. The grout characteristics (e.g., compressive strength, flow characteristics, cure time, water resistance, etc.) can be altered depending on the application. For the structural stabilization of the Tunnel, the use of the grout does not preclude any future final remediation activities.

   The stabilization of the Tunnel will be performed using existing penetrations (left in place and capped from previous tunnel integrity assessments), and installing new penetrations through the wooden wall and roof structures. Fill ports, exhaust ports and instrumentation ports will be installed to allow the grout to be placed into the Tunnel void space in layers or lifts. The filling of the void space in layers is designed such that the containers and railcars remain stationary, manage the heat generation associated with the curing of the grout and control the displaced air volume through the abatement system(s). The grout is expected to seal the

existing and new penetrations, however in the event this does not occur, other sealing options will be employed (e.g., mechanical sealing devices and methods). The stabilization activity is anticipated to last less than 120 calendar days which allows for the grout to cure adequately between lifts.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.44E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	4.42E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	1.00E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	5.92E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239	2.64E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	1.51E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	1.98E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 242	5.50E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sr - 90	8.31E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Cs - 137	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242	Sr - 90		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) WDOH ALTERNATIVE APPROVAL-HEPA Filter Analysis

Destructive analysis of the HEPA filters as the alternate monitoring methodology where the Laboratory analyzes a core sample taken from each individual filter used during the stabilization activity. The contract laboratory procedure(s) or detailed instructions provided by the Contractor will be used by the laboratory to perform the core sampling. The filter coupons will be analyzed individually at the end the stabilization activity for gross alpha and gross beta/gamma (GAB) and the results summed to obtain a total GAB result for the stabilization activity. After the GAB analysis is completed, the coupons will be composited for isotopic analysis (Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241 and Am-241). (WAC 246-247-075(4))

5) EMISSION UNITS IDENTIFICATION

The emission unit shall be clearly labeled by Emission Unit ID and AEI ID number at the filter.

6) WDOH ALTERNATE APPROVAL- Near Facility Monitoring Data Trending

The near facility monitoring network data for stations N969, N970, N977, N978 and N985 will be trended upon receipt of the bi-weekly sample data until the stabilization activity is completed to verify continued low diffuse and fugitive emissions from the stabilization activity. (WAC 246-247-075(4))

7) REQUIRED LOG

A daily log to record the results of the smears of the HEPA filters will be maintained at the work site for review by WDOH. The following information is required:

1. Date and time of smear
2. Instrument type(s) and serial number(s)
3. Background
4. Smear result
5. Action Level
6. Supervisor review signature
7. Corrective action(s) taken (if needed).

(WAC 246-247-040(5))

8) WDOH ALTERNATE APPROVAL- Daily Monitoring

At least daily (at least once per calendar day for each activated license for the duration of the activity), smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. (WAC 246-247-075 (4))

9) EMISSION UNIT CLOSURE

At the conclusion of stabilization activities, if activated, this license will be closed and de-registered as a point source emission unit via a letter from DOE to WDOH. The PUREX Tunnel 1 will remain as a diffuse and fugitive emission source listed on Table 2-1 of the FF-01 license. (WAC 246-247-080(6))

10) WDOH ALTERNATE APPROVAL-Continuous Monitoring

An alternate monitoring methodology with periodic verification of controls is proposed due to the passive nature of the emission control devices (non-powered HEPA filters). Passive point source HEPA filters exhausting to the ambient air will be installed on the Tunnel as a temporary abatement system for structural stabilization work. The potential unabated offsite dose associated with the stabilization activities is calculated to be greater than 0.1 mrem/yr (Table 3). At least daily or upon completion of the stabilization activity, smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. If removable contamination is found above 20 dpm/100cm2 alpha or 1,000 dpm/100cm2 beta/gamma on the exterior of the HEPA filter or the grout fill piping, the source of the contamination will be investigated and corrected. (WAC 246-247-075 (4))

11) EMERGENCY PLANNING

The planning for any proposed new construction or significant modification of the emission unit must address accidental releases that have a probability of occurrence during the expected life of the emission unit of greater than one percent. The subsidence in the Tunnel demonstrates that the probability of occurrence is greater than one percent, therefore in the event of any future form of collapse or accident scenario, a graded approach will be taken if an event occurs during the stabilization activities. DOE Order 151.1C Comprehensive Emergency Management System outlines the Emergency Preparedness Program and framework used by DOE for the notifications and response actions that occur on the Hanford Site. The DOE stabilization Contractor emergency response processes align with the DOE document and shall be followed in the manner as those followed during the Tunnel subsidence event. (WAC 246-247-075(11))

12) WDOH ALTERNATIVE APPROVAL – Startup notification

Activation of this license requires a that a request for approval be made to the Department (verbal followed by email confirmation) and approval by the Department (verbal followed by email confirmation) prior to use. (WAC 246-247-002)

Emission Unit ID: 1480

200E P-202A Tunnel #1-010

202A Tunnel #1-010

This is a MAJOR, PASSIVELY ventilated emission unit.

PUREX

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	High Efficiency Particulate Air (HEPA) Filter	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075 & 40 CFR 61.107(a)	40 CFR 61, Appendix B Method 114	Gross Alpha Beta and composit analyzed for Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241, and Am-241.	Daily smears and final composit of filter samples for analysis.

Sampling Requirements Daily smears will be taken on the outside of the HEPA filters to verify the control of contamination. Destructive analysis of HEPA filter

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for PUREX Tunnel 1 involve stabilization to prevent further collapse on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
PUREX Tunnel 1 Stabilization Activities HEPA 010	AIR 17-913	9/6/2017	1271

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.44E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   This approval also extends to one time construction and stabilization activities associated with the PUREX Tunnel 1 Stabilization Project. There are eight railcars containing contaminated wastes in storage in the Tunnel. The first railcar was placed into storage in June 1960 with the last railcar placed into storage in January 1965. The total Tunnel activity at the time of the storage of the last railcar was 87,800 Ci. As of March 2003 the activity levels had decayed to 29,400 Ci. The process proposed for the structural stabilization of the Tunnel is filling the tunnel from to the maximum extent possible with grout. The grout characteristics (e.g., compressive strength, flow characteristics, cure time, water resistance, etc.) can be altered depending on the application. For the structural stabilization of the Tunnel, the use of the grout does not preclude any future final remediation activities.

   The stabilization of the Tunnel will be performed using existing penetrations (left in place and capped from previous tunnel integrity assessments), and installing new penetrations through the wooden wall and roof structures. Fill ports, exhaust ports and instrumentation ports will be installed to allow the grout to be placed into the Tunnel void space in layers or lifts. The filling of the void space in layers is designed such that the containers and railcars remain stationary, manage the heat generation associated with the curing of the grout and control the displaced air volume through the abatement system(s). The grout is expected to seal the

existing and new penetrations, however in the event this does not occur, other sealing options will be employed (e.g., mechanical sealing devices and methods). The stabilization activity is anticipated to last less than 120 calendar days which allows for the grout to cure adequately between lifts.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.44E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	4.42E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	1.00E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	5.92E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239	2.64E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	1.51E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	1.98E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 242	5.50E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contr butes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sr - 90	8.31E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Cs - 137	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242	Sr - 90		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) REQUIRED LOG

A daily log to record the results of the smears of the HEPA filters will be maintained at the work site for review by WDOH. The following information is required:

1. Date and time of smear
2. Instrument type(s) and serial number(s)
3. Background
4. Smear result
5. Action Level
6. Supervisor review signature
7. Corrective action(s) taken (if needed).

(WAC 246-247-040(5))

5) WDOH ALTERNATE APPROVAL- Daily Monitoring

At least daily (at least once per calendar day for each activated license for the duration of the activity), smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing)

have been sealed. (WAC 246-247-075 (4))

6) EMISSION UNIT CLOSURE

At the conclusion of stabilization activities, if activated, this license will be closed and de-registered as a point source emission unit via a letter from DOE to WDOH. The PUREX Tunnel 1 will remain as a diffuse and fugitive emission source listed on Table 2-1 of the FF-01 license. (WAC 246-247-080(6))

7) WDOH ALTERNATE APPROVAL-Continuous Monitoring

An alternate monitoring methodology with periodic verification of controls is proposed due to the passive nature of the emission control devices (non-powered HEPA filters). Passive point source HEPA filters exhausting to the ambient air will be installed on the Tunnel as a temporary abatement system for structural stabilization work. The potential unabated offsite dose associated with the stabilization activities is calculated to be greater than 0.1 mrem/yr (Table 3). At least daily or upon completion of the stabilization activity, smears on the exterior of the HEPA filters and grout fill piping will be taken as the verification component of the alternate methodology. The verification smears will continue until the grout fill piping and the HEPA filter exhaust duct(ing) have been sealed. If removable contamination is found above 20 dpm/100cm2 alpha or 1,000 dpm/100cm2 beta/gamma on the exterior of the HEPA filter or the grout fill piping, the source of the contamination will be investigated and corrected. (WAC 246-247-075 (4))

8) EMERGENCY PLANNING

The planning for any proposed new construction or significant modification of the emission unit must address accidental releases that have a probability of occurrence during the expected life of the emission unit of greater than one percent. The subsidence in the Tunnel demonstrates that the probability of occurrence is greater than one percent, therefore in the event of any future form of collapse or accident scenario, a graded approach will be taken if an event occurs during the stabilization activities. DOE Order 151.1C Comprehensive Emergency Management System outlines the Emergency Preparedness Program and framework used by DOE for the notifications and response actions that occur on the Hanford Site. The DOE stabilization Contractor emergency response processes align with the DOE document and shall be followed in the manner as those followed during the Tunnel subsidence event. (WAC 246-247-075(11))

9) WDOH ALTERNATIVE APPROVAL-HEPA Filter Analysis

Destructive analysis of the HEPA filters as the alternate monitoring methodology where the Laboratory analyzes a core sample taken from each individual filter used during the stabilization activity. The contract laboratory procedure(s) or detailed instructions provided by the Contractor will be used by the laboratory to perform the core sampling. The filter coupons will be analyzed individually at the end the stabilization activity for gross alpha and gross beta/gamma (GAB) and the results summed to obtain a total GAB result for the stabilization activity. After the GAB analysis is completed, the coupons will be composited for isotopic analysis (Sr-90, Cs-137, Pu-238, Pu-239/240, Pu-241 and Am-241). (WAC 246-247-075(4))

10) EMISSION UNITS IDENTIFICATION

The emission unit shall be clearly labeled by Emission Unit ID and AEI ID number at the filter.

11) WDOH ALTERNATIVE APPROVAL – Startup notification

Activation of this license requires a that a request for approval be made to the Department (verbal followed by email confirmation) and approval by the Department (verbal followed by email confirmation) prior to use. (WAC 246-247-002)

12) WDOH ALTERNATE APPROVAL- Near Facility Monitoring Data Trending

The near facility monitoring network data for stations N969, N970, N977, N978 and N985 will be trended upon receipt of the bi-weekly sample data until the stabilization activity is completed to verify continued low diffuse and fugitive emissions from the stabilization activity. (WAC 246-247-075(4))

Enclosure 2 Table 2-1 Diffuse and Fugitive Emission Units

Table 2–1. The List of Current Diffuse or Fugitive Radioactive Air Emission Sources at the Hanford Site. See Section 5.0, Method for Monitoring and Reporting of Diffuse and Fugitive Sources and Emissions, of the License for a description of monitoring and reporting requirements.

169 P-241ER153-001	170 P-241ER152-001	384 P-296A010-001
404 P-296B002-001	808 V10-11-1	818 State Approved Land Disposal Structure Pipeline 1
819 State Approved Land Disposal Structure Pipeline 2	820 State Approved Land Disposal Structure Pipeline 3	821 State Approved Land Disposal Structure Pipeline 4
822 State Approved Land Disposal Structure Pipeline 5	823 State Approved Land Disposal Structure Pipeline 6	824 State Approved Land Disposal Structure Pipeline 7
825 State Approved Land Disposal Structure Pipeline 8	826 State Approved Land Disposal Structure Pipeline 9	827 State Approved Land Disposal Structure Pipeline 10
828 State Approved Land Disposal Structure Pipeline 11	829 State Approved Land Disposal Structure Pipeline 12	830 State Approved Land Disposal Structure Pipeline 13
832 WESF LLW Floor Drain Vent (Central)	833 WESF LLW Floor Drain Vent (Southeast)	841 291-B-1
887 J-244ER152-002	895 200-E-44	896 200-E-53
897 200-E-117	898 200-E-118	900 200-E-121
901 200-E-125	902 207-B	903 207-A-SOUTH
904 216-A-24	906 216-B-3	907 218-E-10
908 218-E-12A	911 241-A-302A	913 P-241ER151-001
914 P-241AX155-001	915 P-241AR151-001	916 241-A
917 241-AN	918 241-AP	919 241-AW
920 241-AX	921 241-AY	923 241-AZ
924 241-B	925 241-BX-154	926 241-BX
928 244-AR Vault	929 UPR-200-E-18	930 UPR-200-E-100
931 UPR-200-E-112	932 241-C	933 UPR-200-E-78
934 UPR-200-E-84	935 UPR-600-20	936 200-W-54
937 200-W-81	938 200-W-82	939 200-W-83
940 200-W-84	941 200-W-92	942 200-W-106
943 207-U	944 216-T-4b	945 218-W-3A
946 218-W-3AE	947 218-W-4B	948 218-W-4C
949 231-W-151	950 241-S	951 241-SX
952 241-SY	953 241-T	954 241-TX
955 241-TX-154	956 241-TX-155	957 241-TY
958 241-U	960 241-U-151	961 241-U-152
962 242-T-135	963 291-S	966 UPR-200-W-38
967 UPR-20-W-65;UPR-200-W-73	968 UPR-200-W-82	970 UPR-200-W-113
971 UPR-200-E-83	972 UPR-200-N-1	978 2025EC71
979 203A	980 204A	981 206A
982 207BA	983 207S	984 207SL

Table 2–1. The List of Current Diffuse or Fugitive Radioactive Air Emission Sources at the Hanford Site. See Section 5.0, Method for Monitoring and Reporting of Diffuse and Fugitive Sources and Emissions, of the License for a description of monitoring and reporting requirements.

985	210A	986	210E	987	211A
988	211B	989	211BA	990	211BA151
991	211BB	992	211S	993	211T
994	211T52	995	212A	996	212B
1000	213A	1001	214T	1002	215C
1003	216A	1004	216A29A	1005	216A524
1006	216E28A	1007	216E28B	1008	216E28C
1009	216ZP1	1011	216ZP1B	1012	216ZP1C
1013	217B	1014	218B	1015	218E14
1016	218E15	1017	218E7	1018	221A
1019	221BA	1020	221BB	1021	221BC
1022	221BD	1023	221BF	1024	221BG
1025	221BK	1026	221TA	1027	221TB
1028	222B	1029	222T	1035	225EC
1036	225W	1038	231Z	1039	241B361
1040	241WR	1041	2420W	1042	242AL11
1043	242B	1044	242BL	1045	252AB
1046	252AC	1047	2706T	1048	2706TA
1049	2706TB	1051	2711A	1055	2713W
1057	2715B	1058	2716B	1059	2716T
1060	2718S	1061	271B	1062	271BA
1063	271T	1066	272B	1067	272BA
1068	272BB	1070	276B	1071	276C
1072	276S	1073	276S141	1074	276S142
1078	2904S160	1079	2904S170	1080	2904S171
1081	2904S172	1083	291A	1084	291AA
1085	291AB	1086	291AC	1087	291AD
1088	291AE	1089	291AF	1091	291AH
1093	291AK	1094	291B	1095	291BA
1096	291BB	1097	291BC	1098	291BD
1099	291BF	1100	291BG	1101	291BH
1102	291BJ	1103	291BK	1104	292AA
1105	292AB	1106	292B	1107	292S
1108	292T	1110	293A	1111	293S
1112	294A	1113	294B	1114	295A
1115	295AA	1116	295AB	1117	295AC
1118	295AD	1120	296S012	1121	300-214

Table 2–1. The List of Current Diffuse or Fugitive Radioactive Air Emission Sources at the Hanford Site. See Section 5.0, Method for Monitoring and Reporting of Diffuse and Fugitive Sources and Emissions, of the License for a description of monitoring and reporting requirements.

1122 403	1123 4713C	1124 4717
1125 1218-HS Units at WRAP	1136 241-BY	1137 241-A-401
1138 241-A-431	1140 241-AP-271	1141 241-BY-254
1142 241-BY-301	1143 241-BY-302	1144 241-CX-70
1145 241-CX-71	1146 241-CX-72	1147 242-A-702
1148 243-G-8	1149 2707-AR	1150 2714-S
1151 271-CR	1152 292-AR	1419 J-696W1
1483 J-224T		

Enclosure 3 ALARACT Agreements

ALARACT Agreement List of Contents

ALARACT 16.1	TANK FARM ALARACT DEMONSTRATION FOR WORK ON POTENTIALLY CONTAMINATED VENTILATION SYSTEM COMPONENTS
ALARACT 18	ENVIRONMENTAL RESTORATION PROGRAM ALARACT DEMONSTRATION FOR DRILLING
ALARACT 26.1	DISPOSAL BY BURNING OF POTENTIALLY CONTAMINATED TUMBLEWEEDS
ALARACT 28.1	SHUTDOWN OF STACK SYSTEM(s) (Maintenance and Incidental)
ALARACT 29.1	242-A EVAPORATOR MAINTENANCE FACILITY SHUTDOWNS
ALARACT 30.1	TANK FARM ALARACT DEMONSTRATION FOR STACK EXTENSION AND PASSIVE EMISSION POINT VENTURI

ALARACT 01.1

TANK FARM ALARACT DEOMONSTRATION FOR RISER PREPARATION / OPENING

1. **Description of Activity**

Risers which open directly into tanks containing high level waste, such as waste storage tanks, catch tanks, double contained receiver tanks, miscellaneous and other potentially, and known, contaminated risers in Tank Farm facilities shall be accessed using appropriate controls from the latest revision of HNF-5183, "Tank Farms Radiological Control Manual" and the latest revision of TFC-ESHQ-RP_RWP_C-02, "Radiological Containment".

Risers may have screw caps, blind flanges, shield plugs, or equipment installed in them. Preparation may include the following:

- Glove bags or other containments
- Windbreaks or containment tents
- Ground covering
- Decontamination
- Fixatives
- Industrial Hygiene samples

2. **Controls**

a. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

b. Follow ALARACT demonstration for "Installation, Operation, and Removal of Equipment" (ALARACT 13).

c. All containments used are in accordance with the Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment.

d. If sustained wind speeds are >25 mph, then do not open risers.

e. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in unobstructed location representative of the work area.

f. If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and measured wind speed readings must be documented in the Work Record.

g. Open riser time will be minimized.

h. HPT coverage will be performed as specified in the Radiological Work Permit.

i. Ground covering must be installed around the riser and may consist of material such as plastic sheeting rubber matting, foil backed paper, griflon, or any material that will prevent possible contamination from reaching the soil.

3. **Monitoring**

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. Records/Documentation

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. Emission Pathway

a. Existing, active or passive point source.

6. Facility Description

a. All Tank Farm facilities

ALARACT 02.3

TANK FARM ALARACT DEMONSTRATION FOR LOW PURGE GAS CORE SAMPLING

1. Description of Activity

The Core Sampling System is used in single-shelled tanks (SSTs) and double-shelled tanks (DSTs) and miscellaneous tanks to obtain samples of waste for characterization purposes. The Core Sampling System operates in two drilling modes: Push Mode Core Sampling (PMCS) and Rotary Mode Core Sampling (RMCS). PMCS, the preferred mode, involves the hydraulic pushing of the bit through the tank waste without any intentional rotation of the drill bit. The RMCS mode involves intentional rotation of the bit and is used when the waste is more difficult to penetrate. The core sampling system can use a variety of bits for the drilling apparatus. Barrier fluids and purge gasses are used to prevent the release of tank vapors. The Core Sampler has a low purge gas flow rate (<10cfm) and a high purge gas rate (>10cfm) and <120 cfm). Core Sampling under this As Low As Reasonably Acheivable Control Technology (ALARACT) will be conducted at purge gas flow less than 10 cfm.The Core Sampling System consists of the sample platform, pressurized nitrogen or compressed air supply, change out assembly, cable spray washer, and other support equipment.

System set up and sampling is controlled by operating procedures. Riser access is executed in accordance with ALARACT 1.1, "Tank Farm ALARACT Demonstration For Riser Preparation/Opening", and continuous health physics technician (HPT) coverage is provided whenever the riser is open.

The operation of core sampling begins by inserting a drill string into the waste. The Core Sampling System contains a seal against the bottom of the core barrel to prevent back flow of tank waste into the drill string protecting the air pathway out of the tank. This system also has a seal at the top of the drill string to further protect the air pathway out of the tank. Nitrogen/air (or other fluid such as water with a lithium bromide tracer) is used only in amounts sufficient to maintain the hydrostatic head and prevent or minimize movement of tank waste into the core barrel. The drill string section connections are sealed to prevent air leaks and the shielded receiver and sampler have cam-locks to prevent the exposure of the sample to the air.

When the segment is complete, the drill string is disconnected from the Core Sampling System platform and is capped and connected to the shielded receiving vessel while protecting the air pathway. The platform then rotates to place the shielded receiver either directly over a shipping cask or the shielded receiver may be positioned over an x-ray machine to allow the sampler to be x-rayed.

While operating the Core Sampling System in push or rotary mode, water or air is used to maintain the hydrostatic head in the drill string minimizing waste entry into the sampling system. Once a complete core has been obtained, the platform can be repositioned on the same riser or moved to a different riser on the same tank to obtain additional cores. During breakdown, the drill string is sleeved as it is removed from the tank and placed into a waste container. When sampling is complete at one tank, the Core Sampling System will be disconnected and moved to the next tank or stored for later use.

2. Controls

a. When opening riser, use ALARACT demonstration controls for "Riser Preparation/Opening" (ALARACT 1).

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

c. HPT coverage will be performed as specified in the Radiological Work Permit.

d. If sustained wind speeds are >25 mph, then do not initiate sampling.

e. A local wind speed device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in an unobstructed location representative of the work area.

f. If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and the measured wind speed readings must be documented in the Work Record.

g. Valves, caps, and plugs are used to minimize open riser time.

h. Document core sampler drill string seal is in place to minimize exposure pathway.

i. Secure threaded drill string section connections and/or shielded receiver and sampler cam-locks as necessary to minimize exposure pathway.

j. Document passive or active high-efficiency particulate air filtration on tanks.

k. Use approved Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQRP_RWP-C-02, Radiological Containment.

3. Monitoring

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. Records/Documentation

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. Emission Pathway

a. Existing, active or passive point sources (Displacement gas is used in drill string which is a closed system and has minimal/no emission impact).

6. Facility Description

a. All SSTs, DSTs and miscellaneous tanks.

ALARACT 03.1

TANK FARM ALARACT DEMONSTRATION FOR INSTALLATION / OPERATION / REMOVAL OF AUGER SAMPLING EQUIPMENT

1. Description of Activity

Auger sampling represents one technique to remove a sample from tanks that have less than 25 vertical inches of hardened waste material. The auger sampling assembly uses the auger "bit" to obtain a sample of tank waste. Auger sampling equipment consists of an auger "bit," auger rod, auger sleeving assembly, receiving cask, and an on-site transfer cask (OTC).

To begin, a tank riser is opened and the auger adapter sleeving assembly is installed into the tank headspace. The installation of the auger sleeving assembly reduces open riser time. The auger sleeving assembly provides lateral strength to the auger bit and auger rod, and extends from the riser to the top of the waste surface. The receiver cask is then mounted on top of the auger adapter sleeving assembly via a cam lock fitting. This cam lock fitting seals the receiver cask to the auger adapter assembly that is sealed to the riser, thereby minimizing the open riser time.

The auger rod and auger bit assembly are lowered through the top of the receiver cask assembly, through the interior of the auger sleeving assembly, down to the surface of the tank waste. The portion of the auger rod extending above the riser is then hand rotated forcing the auger bit to penetrate the tank waste. The tank waste material fills the grooves (flutes) of the auger bit and this constitutes the waste sample.

The auger bit (now containing the sample) and auger rod are pulled up from the tank waste surface, through auger sleeving, and into the receiver cask on top of the riser. During this sample removal step, the auger rod exits the top of the receiver cask into the ambient environment. The auger rod is surveyed for contamination as it is extracted and contained if found to be contaminated. When the auger bit (sample) is within the receiver cask, a ball valve, mounted on the bottom of the receiver cask, is closed. The receiver cask is then isolated by placing a temporary cover over the auger rod port.

The receiver cask is moved via crane to the OTC. Once the receiver cask has been connected by a cam lock to the OTC, a handle is connected to the auger bit through the top of the receiver cask and the sample is lowered into the cask. The OTC is sealed and then provides a shipping container for the auger sample.

2. Controls

a. Follow ALARACT demonstration for “Riser Preparation/Opening” (ALARACT 1).

b. Follow ALARACT demonstration for “Packaging and Transportation of Waste” (ALARACT 4).

c. HPT coverage will be performed as specified in the Radiological Work Permit.

d. If sustained wind speeds are >25 mph, then do not initiate auger sampling.

e. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in unobstructed location representative of the work area.

f. If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and measured wind speed readings must be documented in the Work Record.

g. Use valves, caps, and plugs to minimize open riser time.

h. Cam locks used to secure cask to riser and shipping cask.

i. Verify passive or active HEPA filtration on tanks.

j. Contain contaminated equipment.

k. Temporary cover placed on top of receiving cask.

l. Sample contained when in shipping cask.

3. Monitoring

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. Records/Documentation

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. Emission Pathway

a. Existing, active, or passive point source.

6. Facility Description

a. All Tank Farm Facilities

ALARACT 04.1

TANK FARM ALARACT DEMONSTRATION FOR PACKAGING AND TRANSPORTATION OF WASTE

1. **Description of Activity**

   Some materials become contaminated during work conducted within Tank Farm Facilities. Such contaminated materials, which are not released or otherwise controlled, are packaged, transported, and disposed of as waste in accordance with waste acceptance criteria of the receiving facility. Radioactive waste generated from Tank Farm operations activities such as pit work, excavations surveillances, housekeeping, maintenance, and tank sampling will be contained.

2. **Controls**

   a. Follow ALARACT demonstration for "Size Reduction of Waste Equipment for Disposal" (ALARACT 15).

   b. Radioactive waste will be contained in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

   c. Radioactive material with removable contamination levels in excess of 100 times Table 2-2 values should have additional packaging controls such as double wrapping, use of bags or other controls.

   d. A survey is conducted, prior to storage or transportation of waste within the WRPS sites, of the outer most packaging layer to verify that removable contamination meets the requirements of HNF-5183, Table 2-2.

3. **Monitoring**

   a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. **Records/Documentation**

   a. Radiological Work Permit

   b. Radiological survey report(s)

5. **Emission Pathway**

   a. Active or passive, point sources and fugitive sources.

6. **Facility Description**

   a. All Tank Farm facilities except special nuclear material.

ALARACT 05.2

TANK FARM ALARACT DEMONSTRATION FOR SOIL EXCAVATION

1. **Description of Activity**

Contaminated soil is routinely excavated in Tank Farm facility Contamination Areas (CA), High Contamination Areas (HCA), Soil Contamination Areas (SCA), and Underground Radioactive Material Areas (URMA) to support riser preparation, repair and maintenance activities, soil sampling, cleanup of contamination, removal of vegetation and biological hazards, and other activities (e.g. laying of conduit or cables for power). This activity also includes the movement of excavated contaminated soil back into the excavation (backfilling).

All radioactively contaminated soil excavation is conducted using hand tools such as shovels, picks, rakes, etc., and/or an electric demolition hammer with spade attachment. No additional motor operated equipment is used.

Surveys are performed throughout the excavation to assure that worker safety and environmental protection is maintained.

2. **Controls**

a. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

b. Once the excavation begins, dust control is used as required.

c. HPT coverage will be performed as specified in the radiological work permit.

d. A beta-gamma survey of the ground surface is required prior to excavation in CA, HCA, SCA, and URMA. An alpha survey may be required prior to excavation per the latest revision of RPP-52322, TOC Technical Basis for Dual Survey Exemption.

e. For excavation in CA, HCA, SCA, and URMA, if beta-gamma activity greater than 5000 dpm/100 cm2 is identified, alpha surveys will also be performed.

f. To the extent practicable for the radiological conditions of the work area, using hand held instrument field survey techniques; clean soil is separated from the soil identified as contaminated.

g. Suppressants such as water, fixatives, covers, or windscreens shall be available and will be used as necessary, including at the end of each shift or when sustained predicted winds are >20 mph.

h. Excavation of radioactive material shall cease if sustained winds exceed 20 mph. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in unobstructed location that is representative of the work area.

i. If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and the measured wind speed readings taken from it must be documented in the Work Record.

j. If the net contamination for the general area is greater than 400 dpm/100 cm2 alpha or greater than 3,000,000 dpm/100 cm2 beta-gamma, stop work in the area exceeding this criteria; notify Environmental

and Radcon, and implement the controls listed below. Once notifications have been made and the following controls implemented, excavation may continue:

•Soil shall be wetted prior to excavation if not already damp.

•General work place air monitoring shall be performed during excavation activities.

•Excavation and contaminated soil piles will be covered with plastic, or fixative applied at the end of each sift, and/or as necessary to prevent airborne dust particles.

•Contaminated soil containing >3,000,000 dpm/100 cm2 beta-gamma or >400 dpm/100 cm2 alpha will be containerized or covered with clean fill if it is to be left for greater than 48 hours.

k. If hot specks are detected during the radiological surveys, the specks will be removed and contained before the activity is allowed to continue unless located in the bottom of the trench after excavation has been completed. Specks found in the bottom of the completed trench may be covered with fill. A hot speck will be defined as a very small amount (i.e., less than or equal to 100 cm2) of contamination reading greater than or equal to 6,000,000 dpm/100 cm2 beta-gamma and/or greater than or equal to 980 dpm/100 cm2 alpha.

l. If soil contamination (not to include hot specks) exceeds 20 mrad/hr , (open window reading), work will be stopped in the area exceeding this criterion, Environmental and Radcon notified, and adequacy of controls will be reassessed. WDOH will be notified. Work may continue when approved by Environmental and Radcon with WDOH concurrence.

3. Monitoring

a. At a minimum, pre and post-job contamination surveys shall be made.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. Records/Documentation

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. Emission Pathway

a. Existing passive (diffuse/fugitive)

6. Facility Description

a. All Tank Farm facilities

ALARACT 06.3

TANK FARM ALARACT DEMONSTRATION FOR PIT ACCESS

1. Description of Activity

This ALARACT demonstration applies to all pits, caissons, filter pits, and the 219-S Waste Handling Facility, which have the potential for exposing tank waste to the pit environment, except 241-ER-152, 241-S-151, 241-UX-154, 241-TX-154, 244-CR Vault DCRT, 244-A Lift Station DCRT, and 244-TX DCRT which must follow an approved Notice of Construction.

If the work activities are such that they can be performed without removal of the pit covers or 219-S roof panels the controls listed in this ALARACT demonstration do not apply. Instead, the work shall be performed using appropriate controls from the latest revision of HNF-5183, "Tank Farms Radiological Control Manual" and the latest revision of TFC-ESHQ-RP_RWP_C-02, "Radiological Containment". Activities which may be conducted in this manner include pit videos/boroscopes, filling seal loops, valve handle change-out, pit wash-downs or other decontamination activities, fixative application, radiological surveys, remote operation of pit drains, leak detector troubleshooting or change-out, pit drain leak rate tests, core drilling cover blocks and removal or insertion of gas sampling lines. Any activity not included in the list must be approved by WDOH on a case-by-case basis.

Pits that do not have the potential for exposing tank waste to the pit environment do not require implementation of ALARACT controls for entry. Examples include flush pits, service pits, annulus pump pits and leak detection pits. These pits shall be accessed using appropriate controls from the latest revision of HNF-5183, "Tank Farms Radiological Control Manual" and the latest revision of TFC-ESHQ-RP_RWP-C-02, "Radiological Containment".

PREPARATION WORK:

A pre-job survey is performed on the exterior surface of the pit and the surrounding area.

A splashguard (monitorable surface) is installed around the pit.

Before the pit covers or 219-S roof panels are removed, an approved fixative may be applied inside the pit and/or the pit may be decontaminated. These processes are generally performed through an access port or by 219-S manned entry. If there is no access port(s), the pit covers are raised and suspended to provide access. A radiological survey is performed, and/or fixative may be applied inside the pit. The pit covers or 219-S roof panels are then removed when necessary to perform work inside the pit. With the pit covers off, additional decontamination activities may include the use of chemicals, peel and strip paints, water, or manual scrub brushes.

A temporary or permanent cover is installed over the pit if ever left unattended.

After all activities in the pit are completed, the pit covers or 219-S roof panels are reinstalled and the splashguard is removed.

Laydown area:
If work is not feasible to be performed in a pit, equipment may be removed from the pit and placed in an adjacent laydown area. The laydown area will border the pit and be monitored for contamination.

Examples for when a laydown area may be used include wrapping equipment (e.g. jumpers, valves, pumps, sump pumps, cover blocks, cover plates), replacing equipment (e.g. gaskets, leak detectors, valves, funnels, piping, jumpers), and other repairs on equipment.

2. <u>Controls</u>

a. Follow ALARACT demonstration for "Riser Preparation/Opening"(ALARACT 1).

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

c. The pit covers or 219-S roof panels are lifted and contained if the removable contamination level is greater than 50,000 disintegrations per minute (dpm)/100 square centimeters (cm2) beta-gamma and 70 dpm/100 cm2 alpha and moved to a storage area.

d. When contamination levels within the pit are expected to exceed 100,000 dpm/100 cm2 beta-gamma or 2,000 dpm/100 cm2 alpha, the following controls shall be implemented to the extent applicable consistent with the latest version of the applicable radiological control manual (e.g., HNF 5183, Tank Farms Radiological Control Manual).

•Decontamination: Wiping and rinsing prior to packaging and removal, tape, strippable paints
•Contamination Control: Wet methods, application of fixative, tape
•Confinement: Packaging, glovebags, sleeving, bagging, tenting, ground covers to prevent spread of contamination to the soil, wind screens, covers (e.g., tarps/plastic, sand, dirt, gravel, other cover device or structure).
Note: The fixative will adhere to the contamination to ensure minimization of potential airborne contamination.

e. Swipes will be taken on the splashguard surface facing the interior of the pit and the laydown area. Splash guards and laydown area are to be maintained below 50,000 dpm/100 cm2 beta-gamma and 70 dpm/100 cm2 alpha.

f. Use a splashguard extending to the edge of the pit. The splashguard will be taped or sealed to the edge of the pit. If it is not feasible to seal the splashguard to the edge of the pit, an additional rail will be installed at the base of the handrail and the splashguard will be taped or sealed to that bottom rail or sealed to the matting or groundcover around the pit. This rail will be as close as possible to the pit edge. A ground cover is then placed around the edge of the pit and extends under the bottom rail. Alternative configurations for splashguards are listed below in f.(a).

f.(a). Alternative configurations for the splashguard include:

1. For above ground pits, the pit wall may be used as the splashguard and the groundcover will be secured to the top of the pit wall and draped over the exterior side of the pit wall and on the ground around the pit.

2. For above ground pits, the splashguard may extend from the inside of the pit wall in addition to being draped over the outside of the pit wall.

3. For pits that are partially above grade, an alternative is to use a combination of pit wall and railing to support the splashguard.

4. In cases where a weather enclosure is placed around the pit, the interior of the weather enclosure may

be used as the splashguard.

5. A single or double gate may be placed in the splashguard to allow pit access.

6. If a laydown area is used the area will be covered by plastic to form a base layer and enclosed within a splash guard. A layer of matting will then be used to protect the base or barrier layer.

Note: Additional layers of plastic may be placed on top of the matting to wrap equipment when needed.

The splash guard and plastic would control the spread of any contamination outside the laydown/wrapping area and the matting will ensure that the base plastic layer remains intact. The laydown area may be located next to the pit with a single splash guard around both areas. Single or double gates may be placed in the splashguard for access purposes.

f.(b) In instances where the splashguard and the pit equipment are in close proximity, a slit or flap may be installed in the splashguard. The slit or flap will be sealed when not in use and can only be used for short periods of time (typically less than an hour) and when no other pit activities that could displace contamination are occurring unless the opening in the splashguard is closed.

1. The time that the slits or flaps are open shall be minimized.
2. Slits and flaps shall be sealed when not in use.
3. No activities which have the potential to disturb removable contamination greater than 5,000 dpm/100cm2 beta-gamma and/or greater than 70 dpm/100 cm2 alpha, shall occur when the flaps or slits are open.

g. If sustained wind speeds are >25 miles per hour (mph), then do not open pits.

h. A local wind speed device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in an unobstructed location representative of the work area.

i. A local wind speed device is used to measure wind speeds, then the use of the local wind speed device and the measured wind speed readings must be documented in the Work Record.

j. HPT coverage will be performed as specified in the Radiological Work Permit.

k. Use approved Containment Selection Guide, Attachment A, found in the latest revision of TFC-ESHQ-RP_RWP_C-02, Radiological Containment.

l. Active ventilation may be utilized in accordance with the PTRAEU NOC.

m. Core drilling through a pit cover (cover block or cover plate) shall be performed in accordance with contamination controls as specified in the latest revision of HNF-5183, Tank Farms Radiological Control Manual and the latest revision of TFC-ESHQ-RP_RWP_C-02, Radiological Containment and below:

1. Verify fixed and removable contamination is less than 5,000 dpm/100 cm2 beta-gamma and less than 70 dpm/100 cm2 alpha in the area to be core drilled or decontaminate to below these levels utilizing non-vigorous hand methods (wiping or scraping) in areas to be core drilled.

2. If decontamination is unsuccessful, cover the area to be core drilled with fixative or tape (tape must be substantial, such as duct tape) minimizing the potential of airborne contamination during the initial

drilling.

3. Ensure drill bit is kept wet during core drilling.

4. Verify fixed and removable contamination is maintained less than 5,000 dpm/100 cm2 beta-gamma and less than 70 dpm/100 cm2 alpha during and after core drilling.

n. Radiologically contaminated material with removable contamination greater than 50,000 dpm/100 cm2 beta-gamma and greater than 70 dpm/100 cm2 alpha left in the laydown area must be wrapped if left unattended.

o. The pit covers are lifted and contained if the removable contamination level is greater than 50,000 dpm/100 cm2 beta-gamma and 70 dpm/100 cm2 alpha and moved to a storage area.

p. A temporary or permanent cover is placed over the pit if the pit is ever left unattended.

3. Monitoring

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. Records/Documentation

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. Emission Pathway

a. Existing passive non-point source.

6. Facility Description

a. This ALARACT demonstration applies to all Tank Farm pits and the 219-S Waste Handling Facility except 241-ER-152, 241-S-151, 241-UX-154, 241-TX-154, 244-CR Vault DCRT, 244-A Lift Station DCRT, and 244-TX DCRT.

ALARACT 07.1

TANK FARM ALARACT DEMONSTRATION FOR TANK WASTE GRAB SAMPLING

1. Description of Activity

Grab sampling is used to obtain small volume samples of tank waste materials. Individual samples are typically <1 liter, but multiple samples can be taken from the tank. The sampled material consists of liquid, sludge's, and solids. Grab sampling techniques are suitable for relatively soft waste. If the waste material is too thick or hard, other sampling techniques (such as core sampling) may be required.

Grab samples are acquired through tank risers. A riser is prepared for grab sampling by first installing a riser adapter called a top hat. The top hat acts as a temporary seal for the open riser to minimize open riser time. The next step is to install a glove bag over the tank riser.

The sampling assembly consists of a sample device suspended on a wire cable. The most commonly used sample devices are a bottle in a weighted bottle holder, and a finger sampler. The bottle is used when the waste material is primarily liquid, while the finger sampler is used to sample relatively solid material.

The sample assembly is placed into the glovebag, the glovebag is closed and the riser is opened. The sample device is lowered with a winch, the waste sample collected, and retrieved from the tank. If the collected sample is a bottle, the bottled is capped, bagged and placed into a shielded container. If the sample is collected in a finger sampler, the waste is transferred to a secondary container, bagged and placed into the shielded container. If a glovebag is used, the sample assembly is placed in the glovebag. The glovebag is closed and the riser is opened. If a glovebox is used, the sample assembly is contained in the glovebox. If the sample is collected in a clam shell sampler, it is clipped, removed from the sampler body, transferred to a secondary container, bagged, and placed into the shielded container.

When sampling is finished, the glove bag is collapsed, venting air through a small HEPA type filter, and all contaminated sampling equipment contained inside is disposed as waste. If a glovebox is used, the glovebox is decontaminated, as necessary, and stored for future sampling evolutions. Air from the glovebox is vented through a "paint can" HEPA filter.

A small percentage of grab-sampling jobs are performed on top of a tank riser without a glovebag. An example would be raising a saltwell pump (accessed from within a pit) and sampling between the pump legs and the saltwell screen. Such sample jobs are controlled through work planning utilizing the Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment.

2. Controls

a. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1).

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

c. Follow ALARACT demonstration for "Pit Access (ALARACT 6), if applicable.

d. HPT coverage will be performed as specified in the Radiological Work Permit.

e. If sustained wind speeds are >25 mph, then do not initiate sampling.

f. A local wind speed device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in an unobstructed location representative of the work area.

g. If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and the measured wind speed readings must be documented in the Work Record.

h. Use riser adapter to minimize open riser time.

i. Samples contained prior to placement in a shielded container.

j. Sample contained when in shipping cask.

k. Contain contaminated equipment.

l. Use approved Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment.

3. Monitoring

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. Records/Documentation

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. Emission Pathway

a. Existing, active or passive point source.

6. Facility Description

a. All Tank Farm SST's, DST's and miscellaneous tanks.

ALARACT 08.1

TANK FARM ALARACT DEMONSTRATION FOR VAPOR SAMPLING

1. Description of Activity

Vapor Samples are acquired through risers or other accessible ports such as Standard Hydrogen Monitoring Systems (SHMS) ports, flush ports, or test ports. There are two methods to collect vapor samples from waste tanks: grab sampling (with SUMMA canisters), and In-Situ Vapor Sampling (ISVS or Type IV) equipment. SUMMA is an evacuated container. Other equivalent evacuated containers may be used in its place.

SUMMA VAPOR SAMPLING

SUMMA sampling equipment consists of a riser adapter (not used for drill string vapor samples), sample tubing, and SUMMA canisters.

To begin SUMMA sampling through a tank riser, the riser is opened and the riser adapter is installed. The riser adapter contains sampling tubes that extend above the top of the riser and continue down into the tank headspace. The sampling tubes are fitted with isolation valves. An installed riser adapter with the sample tube valve closed isolates the tank vapor space from the ambient environment. To sample through a port, the port is opened, a tube is inserted, and an adapter or fitting is installed as appropriate.

In the first step, the sampling tube is purged using portable industrial hygiene instruments and the headspace vapor is drawn into the tube. A tank headspace sample is collected by attaching a SUMMA canister to the top end of a sampling tube and opening the valve. The SUMMA canister, an evacuated container, allows the tank headspace gas to be pulled into the container. The self-contained sample canister is shipped to a laboratory for analysis.

When vapor sampling is finished, the riser adapter/tubing assembly is removed, surveyed by an HPT, and placed into containment sleeving if found contaminated. If a riser is used, a cap or flange is then installed.

TYPE IV VAPOR SAMPLING

The second method of vapor sampling is the In-Situ Vapor sampling (ISVS or Type IV sampling) method. Contrasting SUMMA grab sampling, ISVS sample media is directly exposed to tank vapor gases by placement in the tank headspace. The ISVS sampling equipment consists of a riser adapter, an air pump mounted on a handcart, a manifold for connecting sample tubing, tube bundle assembly, which has a sampling head containing the sample, and the sample media.

The sampling begins by opening a tank riser designated for sampling; installing the riser adapter; inserting the plastic sleeved sample tubes (with the sampling head/media attached) into the riser to the required sampling depth; attaching the sample tubes to the air pump handcart; sampling for a period of time; removal of the sample lines and sample media; removal of the riser adapter and closing the riser; packaging the samples for shipment to a laboratory; and packaging waste for eventual disposal.

2. Controls

a. Follow ALARACT demonstration for “Riser Preparation/Opening” (ALARACT 1).

b. Follow ALARACT demonstration for “Packaging and Transportation of Waste” (ALARACT 4).

c. HPT coverage will be performed as specified in the Radiological work permit.

d. Minimize open riser and port time.

e. Verify passive or active HEPA filtration on tanks.

f. HEPA-type filtration in sample line.

g. Contain contaminated equipment.

h. Sample contained when in shipping container.

3. Monitoring

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. Records/Documentation

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. Emission Pathway

a. Existing, active or passive point source.

6. Facility Description

a. All Tank Farm SST’s, DST’s and miscellaneous tanks.

ALARACT 10.2

TANK FARM ALARACT DEMONSTRATION FOR WATER LANCING

1. Description of Activity

Water lancing the waste in an underground storage tank is performed to determine the depth of the tank from the riser location and to prepare for equipment installation, such as salt well screens, jet pump assemblies, liquid observation wells, and pumps.

A water lance is a long pipe with nozzles at the end to facilitate waste penetration. It is designed to create a large enough hole to accommodate equipment to be installed in the hole. The lance may be raised and lowered into the waste multiple times to create a hole to accommodate the equipment being installed. The lance is designed to operate at 3,000 psi.

A hose from a water truck or portable pump is connected to the top end of the water lance. The water lance is inserted into a tank riser which has a water spray ring mounted within the riser. Additionally, a plastic sleeve is staged and tied off at the top of the lance for deployment during lance retrieval. The water lance is lowered until it penetrates the solid portions of the waste that need to be broken up to allow insertion of the saltwell screen or other equipment. The water lance withdrawal steps are the reverse of the insertion sequence. The water spray ring is used to wash radioactive tank waste from the outside of the water lance. At the completion of the activity the pit or riser will be closed.

Contingency plans within the scope of this ALARACT demonstration are:

a. Removing the lance from the tank for further decontamination by washing, wiping or brushing. The activities will be conducted in accordance with the latest revision of TFC-ESHQ-RP_RWP_C-02, Radiological Containment.

b. Replacement of contaminated parts if they cannot be adequately decontaminated as noted in (a) above. This activity will be conducted in accordance with the latest revision of TFC-ESHQ-RP_RWP_C-02, Radiological Containment.

2. Controls

a. Follow ALARACT demonstration for “Riser Preparation/Opening” (ALARACT 1).

b. Follow ALARACT demonstration for “Packaging and Transportation of Waste” (ALARACT 4).

c. Follow ALARACT demonstration for "Pit Access" (ALARACT 6), if applicable.

d. Follow ALARACT demonstration for "Packaging and Transportation of Equipment" (ALARACT 12).

e. Follow ALARACT demonstration for “Installation, Operation, and Removal of Tank Equipment” (ALARACT 13).

f. Radiological control is achieved by spraying the annulus between the lance outside diameter and riser inside diameter with water during removal.

g. Wiping of the lance may take place immediately above the riser and below the plastic sleeving.

h. Washing is repeated until there is no appreciable dose reduction.

i. Verify passive or active HEPA filtration on tanks.

j. Follow the latest revision of TFC-ESHQ-RP_RWP_C-02, Radiological Containment.

k. HPT coverage will be performed as specified in the Radiological Work Permit.

3. Monitoring

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. Records/Documentation

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. Emission Pathway

a. Existing, active or passive point source.

6. Facility Description

a. All Tank Farm SST, DST and miscellaneous tanks.

ALARACT 11.1

TANK FARM ALARACT DEMONSTRATION FOR WASTE TRANSFERS

1. **Description of Activity**

   Wastes are transferred to, from, and within actively ventilated tank farm storage facilities (i.e. double-shell and single-shell tanks), chemical processing facilities, receiver vaults, mobile tanks, and evaporators. Transfers are made through a network of existing or to be installed above or below ground pipelines, and operating equipment. Transfers also utilize the existing network of controls or transfer structures (currently in use, or constructed under a Notice of Construction) such as diversion boxes, valve pits, double contained receiver tanks, and diverter stations. Jet, submersible, or transfer pumps are used to transfer waste at flow rates up to 300 gallons (1,132 liters) per minute. The pit covers are reinstalled on the pits before starting any waste transfer operation. Occasionally, water is added to a tank or transfer system to prevent or remove plugs. Other techniques to free blockages include chemical flushing, pressurization, temporary jumpers, hydraulic scouring, and the use of heat tracing. Flow rates and pressures used are determined by engineering evaluations.

2. **Controls**

   a. Verify HEPA filtration on sending/receiving tanks.

   b. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1).

   c. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

   d. Follow ALARACT demonstration for "Pit Access" (ALARACT 6).

   e. Follow ALARACT demonstration for "Packaging and Transportation of Equipment and Vehicles" (ALARACT 12).

   f. Follow ALARACT demonstration for "Installation and Removal of Equipment from Tanks" (ALARACT 13).

   g. Follow ALARACT demonstration for "Pit Work" (ALARACT 14).

3. **Monitoring**

   a. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

   b. Radiological surveys of the work area as required by the work package and/or procedure.

   c. Post job surveys.

4. **Records/Documentation**

   a. Flow rate and pressure engineering evaluations

   b. Work package and/or procedures

   c. Radiological Work Permit

d. Radiological survey report(s)

5. Emission Pathway

a. Existing active Tank Farm passive point sources or fugitive non-point source.

6. Facility Description

a. All Tank Farm SST's, DST's and miscellaneous tanks.

ALARACT 12.1

TANK FARM ALARACT DEMONSTRATION FOR PACKAGING AND TRANSPORTATION OF EQUIPMENT AND VEHICLES

1. **Description of Activity**

   Equipment and vehicles that become contaminated during work activities are reused when possible. If the equipment or vehicle is to be reused or stored in a contamination area, the removable activity levels on the surface of the item, or the outer-most container, must be in accordance with the latest revision of HNF-5183, "Tank Farms Radiological Control Manual".

2. **Controls**

   a. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

3. **Monitoring**

   a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. **Records/Documentation**

   a. Radiological Work Permit

   b. Radiological survey report(s)

5. **Emission Pathway**

   a. Fugitive/diffuse source

6. **Facility Description**

   a. All Tank Farm facilities

ALARACT 13.1

TANK FARM ALARACT DEMONSTRATION FOR INSTALLATION, OPERATION, AND REMOVAL OF TANK EQUIPMENT

1. Description of Activity

Equipment may be installed, operated, and removed from tanks (actively and passively ventilated). This ALARACT also applies to installation of expanding foam or other types of material added to a cascade or transfer line to plug the line and preclude waste or water movement necessary for interim isolation of a tank.

This ALARACT demonstration does not provide approval for sluicing and operation of mixer pumps, or lancing.

Equipment is lowered into and removed from tanks either manually or remotely (e.g. using a crane). Once the equipment is installed, mating surfaces of the equipment and riser are sealed.

Equipment will be removed in accordance with the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment.

2. Controls

a. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1).

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

c. Follow ALARACT demonstration for "Pit Access" (ALARACT 6).

d. Follow ALARACT demonstration for "Water Lancing" (ALARACT 10).

e. Follow ALARACT demonstration for "Packaging and Transportation of Equipment and Vehicles" (ALARACT 12).

f. Follow ALARACT demonstration for "Size Reduction of Waste Equipment for Disposal" (ALARACT 15).

g. Equipment is decontaminated or contained when removed from tanks when >50,000 dpm/100cm2 beta gamma and/or >70 dpm/100cm2 alpha.

h. Swipes will be taken to determine that surface of the item or the outermost surface of the container are maintained <50,000 dpm/100cm2 beta-gamma and/or <70 dpm/100cm2 alpha.

i. HPT coverage will be performed as specified in the Radiological Work Permit.

j. If sustained wind speeds are >25 mph, do not install or remove equipment.

k. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in unobstructed location representative of the work area.

l. If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and measured wind speed readings must be documented in the Work Record.

m. Follow the latest revision of TFC-ESHQ-RP_RWP_C-02, Radiological Containment.

3. Monitoring

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. Records/Documentation

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. Emission Pathway

a. Active or passive, point sources and fugitive source.

6. Facility Description

a. All Tank Farm facilities.

ALARACT 14.2

TANK FARM ALARACT DEMONSTRATION FOR PIT WORK

1. Description of Activity

This ALARACT demonstration applies to all pits, caissons, filter pits, and 219-S, which have the potential for exposing tank waste to the pit environment, except 241-ER-152, 241-S-151, 241-UX-154, 241-TX-154, 244-CR Vault DCRT, 244-A Lift Station DCRT, and 244-TX DCRT which must follow an approved Notice of Construction.

Specific activities performed in pits include:
•Installing pit leak detectors.

•Unplugging drains.

•"Clean-out snake" for transfer lines.

•Working on equipment.

•Housekeeping/waste removal activities.

•Jumper Work
When possible the affected lines are flushed prior to breaching the system.

•Equipment size reduction
Cut by low velocity cutting tools (e.g. hydraulic shears, portable band saw, reciprocating saw, hand tools) within the pit.

•Pressure Testing Lines
A pressure test assembly is installed on the line to be tested in one pit. A blank with a drain is installed on the other end of the line in a separate pit.

2. Controls

a. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1).

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

c. Follow ALARACT demonstration for "Pit Access" (ALARACT 6).

d. Follow ALARACT demonstration for "Packaging and Transportation of Equipment and Vehicles" (ALARACT 12).

e. Follow ALARACT demonstration for "Installation, Operation, and Removal of Tank Equipment" (ALARACT 13).

f. Temporary and/or permanent covers will be placed over pits during pressure test(s).

g. A temporary or permanent cover is placed over the pit when unattended.

h. Splashguards and laydown areas shall be installed and maintained as specified in ALARACT 6.

i. Swipes of splashguards and laydown areas will be taken as specified in ALARACT 6.

j. Uniformly distributed removable contamination levels within the pit are decontaminated to less than 100,000 dpm/100 cm2 beta-gamma and 2,000 dpm/100 cm2 alpha by washing or applying an approved fixative. An approved fixative will be applied to pit surfaces if contamination levels exceed the limits stated above or as needed.

NOTE: The fixative will matrix the contamination to ensure minimization of potential airborne contamination.

k. If a used jumper is to be removed from the pit, it is drained or plugged and a fixative is applied.

l. Equipment will be decontaminated or contained if removable contamination is greater than 50,000 dpm/100 cm2 beta-gamma and/or 70 dpm/100 cm2 alpha, except for equipment to be placed directly into a grout box or laydown area.

m. Groundcover shall be placed over the path from the pit or laydown area to the waste box if the equipment is uncontained. In this instance, waste boxes are to be placed as close as feasible to the pit.

n. Equipment moved between the pit, waste box, or laydown area shall either be moved through a gate or kept as low as possible when clearing any obstacles between areas.

o. If sustained wind speeds are >25 mph, then pit work will not be performed.

p. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in unobstructed location representative of the work area.

q. If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and measured wind speed readings must be documented in the Work Record.

r. HPT coverage will be performed as specified in the Radiological Work Permit.

3. <u>Monitoring</u>

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. <u>Records/Documentation</u>

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. <u>Emission Pathway</u>

a. Existing passive non-point source.

6. <u>Facility Description</u>

a. This ALARACT demonstration applies to all Tank Farm pits including 219-S, except 241-ER-152, 241-S-151, 241-UX-154, 241-TX-154, 244-CR Vault DCRT, 244-A Lift Station DCRT, and 244-TX DCRT.

ALARACT 15.1

TANK FARM ALARACT DEMONSTRATION FOR SIZE REDUCTION OF WASTE EQUIPMENT FOR DISPOSAL

1. **Description of Activity**

   Size reducing, cutting or disassembling contaminated material and equipment is done for more economical waste packaging. Containment devices are employed as applicable per the latest revision of TFC-ESHQ-RP_RWP-C-02, "Radiological Containment". The process is limited to mechanical cutting techniques such as low speed and high speed sawing, snipping, shearing, as well as hot work such as cutting torches. The process will also include bending, crimping, and compaction to preclude the need for cutting operations.

   Examples of items cut up or disassembled for waste disposal during facility operations include long-length contaminated equipment (i.e. waste tank level instrumentation, thermocouple trees, specific gravity probes, observation ports, hose and piping), waste sampling equipment (i.e. drill strings or augers), pumps, compressors, and deactivated exhausters with associated ductwork. This includes replacement and disposal of flexible ventilation ductwork located upstream of HEPA filtration.

2. **Controls**

   a. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

   b. Equipment with removable contamination will be contained per the Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment or decontaminated.

   c. HPT coverage as specified in the Radiological Work Permit.

3. **Monitoring**

   a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. **Records/Documentation**

   a. Radiological Work Permit

   b. Radiological survey report(s)

5. **Emission Pathway**

   a. Active or passive, point sources and fugitive source.

6. **Facility Description**

   a. All Tank Farm Facilities

ALARACT 16.1

TANK FARM ALARACT DEMONSTRATION FOR WORK ON POTENTIALLY CONTAMINATED VENTILATION SYSTEM COMPONENTS

1. **Description of Activity**

   Scope will include work on potentially contaminated ventilation system components. This may include repair or replacement of ductwork, dampers, valves, recirculation fans, flexible boots, heaters, instrumentation, or other ventilation system components. Work may also involve opening the ventilation system to take measurements, testing, or sampling in the ventilation system. The process will be performed using mechanical techniques such as unbolting, drilling, snipping, shearing, cutting, abrading, or low and high-speed sawing, as well as hot work such as cutting torches. Other activities may include installation of instrumentation, test ports, or sample ports. Containment devices are employed as applicable per the Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQ-RP_RWP_C-02, "Radiological Containment".

2. **Controls**

   a. If exhaust systems are replaced under the "replacement-in-kind" provisions of WAC 246-247 utilizing this ALARACT demonstration, then the abatement controls of the new system must be equivalent or better than those of the system that is replaced. The operational flow rate of the new system may not exceed that of the replaced system.

   b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

   c. Work with removable contamination will be contained per the Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment.

   d. HPT coverage as specified in the Radiological Work Permit.

3. **Monitoring**

   a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. **Records/Documentation**

   a. Radiological Work Permit

   b. Radiological survey report(s)

5. **Emission Pathway**

   a. Active and passive, point sources and fugitive source.

6. **Facility Description**

   a. All Tank Farm Facilities

ALARACT 18

ENVIRONMENTAL RESTORATION PROGRAM
ALARACT DEMONSTRATION FOR DRILLING

1. Description of Activity

Drilling, outside of the Tank Farms fence line, is conducted to meet multiple needs on the Hanford Site. These include, but are not limited to, the installation of groundwater monitoring wells, extraction wells, injection wells, vadose zone characterization, aquifer/river sampling tubes, etc. The drilling methods currently used include cable tool, sonic, air rotary, diesel hammer direct push, and mud rotary technologies as described in Appendix 1. In some cases, more than one method (e.g. air rotary and cable tool) may be used to complete a boring. All drilling and well decommissioning activities are conducted in compliance with WAC 173-160.

The drilling process generates wastes, such as soil cuttings, purge water, decontamination fluids and other wastes that are managed in accordance with applicable regulations and contractor procedures. Soil and/or groundwater samples may be taken during the drilling process. Upon reaching the desired total depth, some borings are completed as groundwater monitoring wells. Groundwater wells and borings that have no further intended purpose are decommissioned.

The drilling and sampling equipment is cleaned between borings to prevent cross contamination. Equipment cleaning techniques for push technologies include wiping/scrubbing with clean paper towels and/or rags, and may be followed by a 3 bucket wash. These methods are used to remove smearable contamination prior to transporting the equipment to another location. These methods are also used for the other drilling techniques. High temperature and pressure (180 °F and 1000 psi) washing at a decontamination pad is necessary as a final cleaning step for some drilling equipment.

Abrasive decontamination methods are sometimes needed to remove small isolated areas of fixed contamination after all smearable contamination has been eliminated. It may consist of scrubbing the contaminated area with a wire brush (or other mechanical means) using an approved cleaner, or removing a thin layer of metal using a metal file and/or sandpaper.

The following is a description of drilling techniques that may be utilized in areas outside the Tank Farms fence line.

Cable Tool Drilling:

A temporary drive casing and cuttings drive barrel is driven into the soil by mechanical means at ground surface. The outer drive casing prevents caving of the formations penetrated as the hole is advanced. Once filled, the barrel is withdrawn to the surface and the cuttings are emptied from the barrel into an appropriate waste container, or to ground surface, depending on environmental and health risk determination. “Hard tool” cable tool drilling is used in difficult to penetrate formations. In this case, water is added to form a slurry at the bottom of the hole to facilitate cuttings removal by means of a wireline bailer. With either method, if contamination levels of concern are present, the cuttings are placed in a containment drum for appropriate disposal. This process is repeated until the drive casing reaches the desired depth. The inner barrel is then withdrawn, and the drive casing is incrementally pulled back to the surface as well completion components are installed, or plug back materials are placed if the hole is decommissioned.

Sonic Drilling:

This drilling method consists of a drive casing and may include an inner cuttings barrel system. A vibration is induced in the drive casing system and it is mechanically pushed into the formation. As the system advances, formation materials are compressed as the tool advances. If sampling is desired, an inner sample barrel can be installed to capture a sample of the material penetrated. Excess material is compressed outside the drive casing. The drive casing/inner barrel assembly is advanced incrementally to obtain a sample, the inner barrel is withdrawn, and the cuttings are contained or discarded, as described above. This process is repeated until the drive casing reaches the desired depth. Boring completion or decommissioning is similar to the cable tool method.

Direct Push Technologies:

Push technology is conducted on the Hanford site using cone penetrometers, Geoprobes™ , and hand driving techniques. The Geoprobe and cone penetrometers utilize hydraulics to push small diameter rods (1" to 3") into the formation by using the weight of the heavy truck as resistance. The system minimizes contaminant exposure since there are no drill cuttings or exhaust air as the hole is advanced. An instrumented real-time sensor can be used on the cone penetrometer to obtain formation parameters as it is being pushed, and a detachable (pull-back) shoe can be opened to obtain formation or groundwater samples by means of a retrievable inner wire-line tool. Limited geophysical logging can also be conducted in these holes using very small diameter tools compatible with steel casing. Hand driving for aquifer tube installation uses sledges, portable jackhammers, etc., to mechanically drive ~1" diameter rods to very shallow depths (<30 ft). A miniature screen with attached polyethylene tubing is placed in the hand driven holes prior to withdrawing the rod. The Geoprobe is sometimes used to support aquifer tube installations, and sonic technology can be used to assist small diameter cone penetrometer rod penetration.

Air Rotary Drilling:

This drilling method consists of a dual-wall casing, assembly consisting of an outer drive casing and an inner rotary drill stem and bit assembly. The outer drive casing is driven from ground surface, or hydraulically pushed down, as the inner rotary assembly advances into the formation. Air is injected through the inner drill stem/bit and flushes the cuttings up the drive casing/drill stem annulus. Cuttings are handled as above. Advancing the boring is generally continuous since cuttings are removed as the boring is advanced. Water may be added to the air stream to assist in lifting the cuttings and to minimize dust emissions. Return air is put through cyclone separators to remove solids and minimize dust. This process is repeated until the drive casing reaches the desired depth. Boring completion or decommissioning is similar to the cable tool method.

Diesel Hammer Drilling:

The drive casing in this drilling method is advanced using a diesel hammer technique. Drill cuttings are removed using an inner core barrel on a wire-line system. Cuttings are handled as above. This process is repeated until the drive casing reaches the desired depth. Boring completion or decommissioning is similar to the cable tool method.

Mud Rotary Drilling:

Mud rotary drilling is a drilling method that involves the continuous circulation of fluids (commonly referred to a drilling mud) in the borehole as the drill bit is advanced. There are two methods where

drilling fluids are used: 1) direct rotary and 2) reverse circulation rotary. With either method, the drilling mud is circulated from the surface to the bottom of the borehole and into a pit collection system at the surface. The drilling method itself involves the rotation of a bit attached to a drill string with downward applied weight or pressure to advance the borehole. The method is similar to Air Rotary drilling discussed above, except that a fluid is circulated instead of air. The essential functions of a drilling mud are to:

1) Lift the formation cuttings from the bottom of the hole to the surface and carry them to a settling tank.
2) Seal the borehole wall to reduce mud loss to the formation.
3) Cool and clean the drilling bit.
4) Lubricate the drilling bit, bearings, mud pump and drill pipe.
5) Allow drill cuttings to be easily removed through solids control.
6) Clean the bottom of the hole.
7) Aid in formation evaluation.
8) Aid in formation stability.

The drilling mud requires constant monitoring and conditioning to ensure required mud properties are maintained to meet the above functions.

The drilling mud and drill cuttings are disposed of as appropriate either in an approved disposal facility, or to ground surface, depending on environmental and health risk determination. Borehole completion or decommissioning is similar to the cable tool method.

2. <u>Controls</u>

a. Contractor radiological, waste management, sampling, decontamination, drilling, decommissioning, transportation, and health and safety procedures are followed.

b. A Radiological Risk Assessment is conducted prior to, and for, each prospective drilling location. A Radiological Risk Assessment Checklist is completed, and a Hanford Site Excavation Permit is completed and approved. A Radiological Work Permit (RWP) is completed for all High Risk intervals to be drilled.

c. A ranking system is used at each drilling location (and the intervals within, as appropriate) of Low, Medium, or High Risk. It is important to note that different depth intervals may have different risk levels in the same well. Controls are upgraded and downgraded according to the interval exposed during the drilling process.

d. Controls are based on risk level and the site-specific drilling location.

High Risk borings (e.g., those located in a crib, pond or ditch) are drilled using methods that have the least potential for air releases (i.e., not air rotary). The equipment is wiped clean as it is brought out of the boring. Core barrel samples are contained in plastic sleeves and the bottom tied off. The sleeves and drill cuttings are placed into appropriate containers for analysis and/or disposal. Continuous radiological control technician (RCT) coverage is provided for the duration of the High Risk drilling. The RWP identifies radiological conditions, establishes worker protection and monitoring requirements, and contains specific approvals for radiological work activities. When characterizing highly contaminated waste sites a HEPA ventilated glove bag or enclosure is used to obtain samples of the cuttings.

Medium Risk borings (e.g., those located within 50 feet of a crib, pond or ditch) are evaluated on a case-by-case basis and controls depend on site-specific factors. In most cases, the boring is drilled in a

conservative manner using methods that have the least potential for air releases (i.e., not air rotary). Continuous RCT coverage is provided. If radioactivity is detected, the work is immediately stopped, and the boring is upgraded to High Risk with appropriate controls in place prior to proceeding.

Low Risk borings (balance of the Hanford site) may be drilled with any of the methods described in Appendix 1. If using air rotary techniques, water may be added to minimize dust and assist in cuttings removal. RCT surveys are conducted either every morning or afternoon to verify the absence of contamination. If radioactivity is detected, the work is immediately stopped, and the boring is upgraded to High Risk with appropriate controls in place prior to proceeding.

Drilling equipment is checked for contamination prior to moving it to a new location. Smearable contamination is removed by the manual methods discussed earlier. It is sometimes necessary to apply a fixative or to wrap the area to prevent the spread of contamination that is not easily washed or wiped off. High temperature and pressure (180 °F and 1000 psi) washing is necessary as a final cleaning step for some drilling equipment.

3. Monitoring

Air monitoring is required for drilling in High Risk intervals. Existing near-facility air monitoring stations will be utilized when possible. If existing near-facility air monitoring stations do not provide adequate coverage for the predominate wind direction, additional monitoring will be conducted.

4. Records/Documentation

a. Radiological Work Permit, if applicable.

b. Analytical results from the near-facility air monitoring station.

c. Notify the WDOH of all drilling locations prior to initiating field activities and in the event that unanticipated contamination is encountered.

5. Emission Pathway

a. Potential fugitive emissions

6. Facility Description

a. Hanford Site outside of the Tank Farms fence line

ALARACT 26.1

DISPOSAL BY BURNING OF POTENTIALLY CONTAMINATED TUMBLEWEEDS

1. **Description of Activity**

   Windblown collections of tumbleweeds along fence lines, buildings, and other locations must be removed for purposes involving safety and security. Due to the volume and makeup of these collections, the only reasonable option for large-scale disposal is collection followed by controlled burning outdoors.

   Some burns are conducted near the collection point while others are conducted in designated central locations which receive compacted, shredded, or pitched loads of the weeds during various times of the year. Due to their being an opportunistic invader species with deep roots, there are very infrequent occasions where the weeds may grow in areas with contaminated soil, and uptake low levels of radioactive contamination. This ALARACT demonstration provides the description of radiological controls and monitoring that will be performed in taking reasonable precautions during disposal of the weeds by open burning.

2. **Controls**

   If collected in areas, which may reasonably provide some potential for incurring contaminated windblown tumbleweeds, collection of the windblown weeds includes radiological, field surveys using hand held instruments. The surveys are conducted in accordance with approved site radiological control procedures. Handling may involve loading for transport, compacting, shredding, piling for disposal, or other manual methods.

   Any detected contamination will be removed prior to burning.

   The burning will not occur in any area posted as containing radioactive contamination.

   The burning will be conducted in accordance with the current approved Hanford Site prescribed fire burn plan, and with constant job coverage by Hanford Fire personnel and equipment.

   Note: If radioactive contamination is found after the burn, DOH will be notified.

3. **Monitoring**

   Monitoring will consist of the radiological field surveys conducted as part of the activities described above.

4. **Records/Documentation**

   Tumbleweeds collected from areas with a reasonable potential for contamination are surveyed using hand held instruments. The surveys are conducted in accordance with approved site radiological control procedures.

   Surveys are documented on Radiological Survey Reports, reviewed, and retained according to Department of Energy requirements.

5. **Emission Pathway**

   Emission from the proposed burn will be a diffuse emission.

6. **Facility Description**

The Waste Information Data System site 200-W BP (also known as 200-W Burning Pit, Pit 34) is the primary burn location. However, as noted in Section 1, tumbleweed burning can also occur at other locations where tumbleweeds are collected.

ALARACT 28.1

SHUTDOWN OF STACK SYSTEM(s) (Maintenance and Incidental)

1. Description of Activity

The listed facilities are currently under Surveillance and Maintenance (S&M) status, meaning active processing has ceased with radioactive feed materials no longer brought in. Surveillances and maintenance activities are performed in these facilities including, but not limited to minor activities such as exterior and interior inspections; checking for door security, for any unauthorized building intrusions, and for structural integrity; water intrusion cleanup; waste handling/removal; maintaining radiological airborne control zones; animal or insect intrusion abatement; maintaining operating systems and building integrity, eliminating utilities when possible; identifying and reducing hazards; and housekeeping. The primary ventilation systems and associated record sampling systems operate at each facility as described in the Hanford Site Air Operating Permit.

At certain times to support these various S&M activities, or related to maintenance or replacement-in-kind, any one of these primary ventilation systems may be shut down for a period up to or exceeding two days (48 consecutive hours) duration.

The three ventilation systems which may be shut down are: 332 REDOX, 402 B-Plant, 369 PUREX.

2. Controls

It was agreed that an As Low As Reasonably Achievable Control Technology (ALARACT) demonstration is appropriate to address control and monitoring of potential radioactive air emissions during these extended periods of shutdown exceeding two days.

During periods of pre-planned shutdown of less than two days duration, no additional monitoring or controls are required under the ALARACT. During shutdown periods exceeding two days, the following controls will be implemented:

Inform the Washington Department of Health (WDOH) by telecon or email at the start of each use of this ALARACT action or as soon as it is realized that the systems will be shutdown for more than two days.

To provide assurance that containment of airborne contamination is maintained during the subject periods of shutdown,

Contractor Radiological Control Technicians (RCTs) will perform daily (during normal work days I.e., not weekends or holidays) radiological swipe

surveys on a representative few normally accessible outer facility doors. If an increase in removable (smearable) contamination is detected at any of

these locations during the period of shutdown, notify the WDOH and describe containment measures to be taken.

During the subject periods of shutdown, to avoid situations which might encourage increased diffuse or fugitive emissions, no activities will be

conducted inside the facility except those approved for unfiltered containment in accordance with established Radiological Control criteria.

If the fans are not restarted within the scheduled time discussed with WDOH, WDOH will be contacted, and continued monitoring and/or airborne controls will be discussed.

3. **Monitoring**

It was agreed that an As Low As Reasonably Achievable Control Technology (ALARACT) demonstration is appropriate to address control and monitoring of potential radioactive air emissions during these extended periods of shutdown.

4. **Records/Documentation**

5. **Emission Pathway**

6. **Facility Description**

ALARACT 29.1

242-A EVAPORATOR MAINTENANCE FACILITY SHUTDOWNS

1. **Description of Activity**

   Scope will include planned maintenance facility shutdowns at 242-A Evaporator where electrical power to both 296-A-21 and 296-A-22 stacks are de-energized for greater than 24 hours.

   The process of planned maintenance outages and facility upgrades that require de-energizing both the building stack (296-A-21) and vessel vent (296-A-22) for facility upgrades or maintenance will be performed. Building process areas will have the interior doors sealed with tape to help minimize diffuse and fugitive emissions to facility personnel and the outside ambient atmosphere pursuant to meeting WAC 246-247-130 to meet ALARACT compliance demonstration requirements. If entry to process areas is required then radiological controls will be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual to minimize both time and provide controls for diffuse and fugitive emissions. No facility operational (double shell tank liquid minimization) activities will be performed during the time that neither the 296-A-21 and 296-A-22 stacks are not operating. Radiological containment practices and devices will be employed as applicable per the Containment Selection Guide Attachment A, from the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment.

2. **Controls**

   a. Work with removable contamination will be contained per the Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment.

   b. HPT coverage as specified in the Radiological Work Permit.

3. **Monitoring**

   a. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. **Records/Documentation**

   a. Radiological Work Permit

   b. Radiological survey report(s)

5. **Emission Pathway**

   a. Active and passive, point sources and fugitive sources.

6. **Facility Description**

   a. The 242-A Evaporator Facility stacks 296-A-21 and 296-A-22.

ALARACT 30.1

TANK FARM ALARACT DEMONSTRATION FOR STACK EXTENSION AND PASSIVE EMISSION POINT VENTURI

1. Description of Activity

This work is for passively ventilated tank that have a breather filter for filtration that require a stack extension to aid chemical vapors in the work space. These filter attachments will be attached, bolted, flanges attached, and welds applied to raise the stack exit height. There is no plan to change the existing breather filter housings other than modification of the downstream and upstream piping simply to aid placement of the stack extension.

The process will be performed using mechanical techniques such as unbolting, drilling, snipping, shearing, cutting, grinding, abrading, or low and high speed sawing, as well as hot works such as cutting torches or welding. Other activities may include installation of instrumentation, test ports, or sample ports. Containment devices are employed as applicable per the Containment Selection Guide, Attachment A, found in the latest revision or TFC-ESHQ-RP-RWP-C-02, Radiological Containment.

If exhaust systems are replaced under the "replacement-in-kind" provision of WAC 246-247 utilizing this ALARACT demonstration, then the abatement controls of the new system must be equivalent or better than those of the system that is replaced.

2. Controls

a. Follow ALARACT Demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

b. Follow ALARACT Demonstration for “Size Reduction of Waste Equipment for Disposal” (ALARACT 15).

c. Follow Tank Farm ALARACT Demonstration for “Work on Potentially Contaminated Ventilation System Components” (ALARACT 16).

d. Work with removable contamination will be contained per the latest revision of the Containment Selection Guide, Attachment A found in the latest revision or TFC-ESHQ-RP-RWP-C-02, Radiological Containment.

e. HPT coverage as specified in the Radiological Work Permit.

3. Monitoring

a. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

b. At a minimum pre and post-job surveys (smears) shall be taken.

4. Records/Documentation

a. Radiological Work Permit

b. Radiological Survey Report(s)

5. **Emission Pathway**
   a. Active and passive, point sources and fugitive sources.

6. **Facility Description**
   a. All Tank Farm facilities

Enclosure 4 Air Monitoring Stations

Enclosure 4 Air Monitoring Stations

Table 4-1 Air Monitoring Stations Subject to FF-01 Section 5.0 (as applicable)

(Monitors listed by EDP code, if appropriate, or other identifying indicator)

200W Area	200E Area	100 Areas	600 Area	300 Area	400 Area	Off-Site Dose Calculations
*N155 *N161 *N165 *N168 *N304 *N433 *N441 *N442 *N449 *N456 *N457 *N554 *N555 *N931 *N956 *N963 *N964 *N965 *N966 *N974 *N975 *N987 *N994 +200W SE (N901)	*N019 *N158 *N480 *N481 *N498 *N499 *N532 *N559 *N582 *N957 *N967 *N968 *N969 *N970 *N972 *N973 *N976 *N977 *N978 *N984 *N985 *N999 +200E SE (N920) +S of 200E (N929) +B Pond (N924)	*N476 *N534 *N535 *N575 *N576 +100K Area (N900)	*N981	*N130 +300 NE (N902) +300 South Gate (N903) +300 Trench (N904) +300 Water Intake (N905) +300 South West (N918)	+400 S (N910) +400 N (N911)	#Ringold Met Tower (N933) #W End of Fir Road (N934) #Dogwood Met Tower (N935) #Byers Landing (N936) #Battelle Complex (N937) #Horn Rapids Substation (N938) #Prosser Barricade (N939) #Wahluke Slope (N941) #Basin City School (N943) #Leslie Groves-Richland (N944) #Pasco (N945) #Kennewick (N946)

*** Current near-facility monitoring (NFM) network stations**

+ Surface environmental surveillance program (SESP) stations that are utilized to serve NFM purposes

 # monitoring stations used to support annual off-site dose compliance calculations

Clarifications

- "Near-facility" monitoring stations are primarily used as one method for periodic confirmatory measurement (PCM) of potential diffuse/fugitive emissions from nearby Hanford Site sources. Other specified monitoring stations are used to support the off-site dose calculations for demonstrating compliance with the 10 mrem/year standard.
- Specific references to "near facility," "near field" or similar in the FF-01 (including within individual emission unit licenses) are limited to the stations listed in Table A or official correspondence updating Table A, excluding those stations identified as being used for annual off-site dose calculations.
- Air monitors used exclusively for CERCLA compliance purposes are not subject to FF-01 requirements.
- For cost-efficiency, Hanford Site air monitors subject to FF-01 Section 5.0 are sometimes utilized for multiple purposes. The operational aspects unrelated to FF-01 compliance will be conducted in a manner that does not prevent the air monitors from operating in compliance with the FF-01 requirements.

Other Air Monitors

The following monitors are recognized as being operated as part of the SESP for purposes of compliance with DOE orders and are not used to monitor specific sources of radioactive air emissions. The department will be notified when the locations of these monitors change.

Table 4-2 Air Monitoring stations NOT Subject to FF-01 Section 5.0

200W Area	200E Area	100 Areas	600 Area	Perimeter
Army Loop Camp (N930) SW of B/C Crib (N932)		100 N-1325 Crib (N926) 100 D Area (N927) 100F Met Tower (N921)	Hanford Town Site (N922) Gable Mt. (N928) Wye Barricade (N906)	Rattlesnake Springs (N940) S End Vernita Bridge (N942) #Yakima Barricade (N907)