



LB# 4371

AIR 15-414
NOC 945

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
OFFICE OF RADIATION PROTECTION
309 Bradley Blvd., Suite 201 • Richland, Washington 99352
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April 30, 2015

Mr. Kevin W. Smith, Manager
United States Department of Energy
Office of River Protection
P.O. Box 450, MSIN: H6-60
Richland, Washington 99352

Re: Approval of Notice of Construction (NOC) 945

Dear Mr. Smith:

Pursuant to Chapter 246-247 of the Washington Administrative Code (WAC), your application was approved, as negotiated, on April 27, 2015, according to the enclosed emission unit specific license for:

**Tank Farm Operations Diffuse and Fugitive License
(EU 1418)**

The conditions, controls, monitoring requirements, and limitations of this license must be observed in order for you to be in compliance with WAC 246-247. Failure to meet any provision of this license may result in the revocation of approval, the issuance of Notices of Violation, or other enforcement actions under WAC 246-247-100.

It is anticipated that transition to the new enclosed license will occur over the remainder of calendar year 2015. Report of closure or revisions for the replaced licenses will be submitted by December 30, 2016. Request for extensions will be addressed on a case by case basis.

If you have any questions regarding this approval, please contact Randy Utley at (509) 946-0534.

Sincerely,

John Martell, Manager
Radioactive Air Emissions Section

Enclosure: Applicable Portion of License

cc: (see next page)

Public Health - Always Working for a Safer and Healthier Washington



cc: Ruth Allen, WRPS
Matthew Barnett, PNNL
Lucinda Borneman, WRPS
Lee Bostic, BNI
Dennis Bowser, USDOE-ORP
Cliff Clark, USDOE-RL
Jack Donnelly, WRPS
Rick Engelmann, CHPRC
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Bryan Trimberger, USDOE-ORP
Randy Utley, WDOH
Jeff Voogd, WRPS
Joan Woolard, MSA
Davis Zhen, EPA
Environmental Portal
RAES Tracking: Line 15-33; Resp. to IM# 8,507; NOC 945; EU 1418

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
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Monitoring Requirements

state enforceable: WAC 246-247-040(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)
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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)
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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.