

AIR 14-1001
NOC 920

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
OFFICE OF RADIATION PROTECTION
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October 9, 2014

Ms. Stacy Charboneau, Assistant Manager
For Safety and Environment
United States Department of Energy
Richland Operations Office
P.O. Box 550, MSIN: A5-14
Richland, Washington 99352

Dear Ms. Charboneau:

Pursuant to Chapter 246-247 of the Washington Administrative Code (WAC), your application to operate is hereby approved according to the enclosed emission unit specific license for:

**Operation of 2706-T Building (replaces NOC 829)
(NOC 920, EU 315)**

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.

This approved emission unit specific license will be included in the next revision of the Hanford Site Radioactive Air Emissions License (FF-01).

If you have any questions regarding this approval, please contact Tom Frazier at (509) 946-0774.

Sincerely,

P. John Martell, Manager
Radioactive Air Emissions Section

Enclosure: Conditions and Limitations for EU 315 (NOC 920)

cc: (see next page)



Ms. Stacy Charboneau
October 9, 2014
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cc: Ruth Allen, WRPS
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Cliff Clark, USDOE-RL
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Valarie Peery, Ecology
John Schmidt, WDOH
Maria Skorska, Ecology
Jeff Voogd, WRPS
Joan Woolard, WRPS
Davis Zhen, EPA
Environmental Portal
RAES Tracking: Line 929; Follow up to LB# 4174; NOC 920; EU 315

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 Exhaust Velocity: 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 decommissioning operations at the Hanford Site.

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

Project Title

Operation of 2706-T Building (replaces NOC 829)

Approval #	Date Approved	NOC_ID
AIR 14-1001	10/10/2014	920

Conditions (state only enforceable: 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:

A1) 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 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:

- A1a) Sorting.
- A1b) Segregation.
- A1c) Removing prohibited items.

- A1d) Compositing/aggregating solids or liquids.
- A1e) Adding absorbent.
- A1f) 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].
- A1g) Void filling.
- A1h) Pressure relief/release (e.g., aerosol cans, gas cylinders, drums, or other similar containers).

A2) VERIFICATION ACTIVITIES

Verification support activities are provided for waste and other materials that are generated on or off the Hanford Site.

Verification activities are:

- A2a) Physical observation.
- A2b) Nondestructive examination (NDE).
- A2c) Nondestructive assay (NDA).
- A2d) Chemical field screening.
- A2e) Radiological surveys.
- A2f) Radiological samples.
- A2g) Headspace gas sampling.
- A2h) Chemical sampling.

A3) 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:

- A3a) Field screening [e.g., pH paper, oxidizer, volatile organic analyses (VOAs), polychlorinated biphenyls (PCBs), or similar screening parameters].
- A3b) Obtaining a sample for analysis [e.g., grab, composite, composite liquid waste sampler (COLIWASA), or other similar sampling techniques].
- A3c) Shipping/transferring the samples to an approved laboratory for analysis.
- A3d) Disposition of sample returns (e.g., placement back into the parent container or another approved container/tank).
- A3e) Headspace gas analysis [typically in support of the Waste Isolation Pilot Plant (WIPP) Project].

A4) 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:

- A4a) Vacuum blasting.
- A4b) Brushing.
- A4c) Abrasive tools.
- A4d) Scraping.
- A4e) Washing (e.g., chemicals/detergents).
- A4f) Immersion.
- A4g) Electro-polishing.
- A4h) Cutting (e.g., removal by sawing, torch cutting more highly radioactive components or other similar

methods).

A4i) Rust/paint removal.

A4j) Sand blasting.

A4k) Vacuuming.

A5) 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:

A5a) Painting.

A5b) Crane maintenance.

A5c) Electronic systems functional checks and repairs [CAMs, personnel contamination monitors (PCMs)].

A5d) Calibrations.

A5e) Mechanical overhaul and rebuild.

A5f) Bearing replacement.

A5g) Pump and motor alignment.

Maintenance may be performed on:

A5h) Rollup doors.

A5i) Heat pumps.

A5j) Exhaust fans.

A5k) Transformers.

A5l) Scale systems.

A5m) Wire rope.

A5n) Stack systems.

A5o) Forklifts.

A6) WASTE TREATMENT ACTIVITIES

2706-T is a RCRA treatment and Storage facility permitted by the Washington State Department of Ecology (Ecology).

Treatment activities are:

A6a) Macroencapsulation.

A6b) Absorption.

A6c) Neutralization.

A6d) Immobilization.

A6e) Encapsulation.

A6f) Stabilization (solidification, cementation, grouting).

A6g) Compaction.

A6h) Amalgamation.

A6i) Segregation.

A6j) Shredding.

A6k) Venting and drilling.

A6l) Size Reduction.

A7) RECYCLING ACTIVITIES

Materials are recycled whenever possible. Recycled materials are: ferrous and non-ferrous metal, light bulbs, aerosol cans, oils, and batteries.

A8) STORAGE ACTIVITIES

2706-T stores materials (chemicals, or equipment, or similar materials) to support operations. Radioactive wastes may be stored uncontainerized or in:

A8a) Containers (boxes, drums, tanker trucks/railcars, or large diameter containers).

A8b) Tanks.

A8c) Sumps and pipes.

A9) 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:

A9a) Receiving waste (liquid, solid, semi-solid) for storage and/or treatment.

A9b) Movement of waste (liquid, solid, semi-solid) and equipment.

A9c) Movement of liquids, sludges, or other waste from containers and/or tanks via transfer lines.

A9d) Waste container transfers.

A9e) Placing and storing chemical products in flammable cabinets or other approved storage locations.

A9f) Movement of contaminated material.

A10) HOUSEKEEPING ACTIVITIES

Housekeeping activities involve maintaining 2706-T in a clean and orderly condition.

Housekeeping activities are:

A10a) Sweeping (brooms).

A10b) Mopping (squeegees or mops).

A10c) Vacuuming.

A10d) Dusting.

A10e) Wiping (sponges, towels).

A10f) Picking up debris.

A10g) Removal of trash.

A11) 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:

A11a) Container storage areas treatment and storage tanks and ancillary equipment.

A11b) General condition of building structures.

A11c) Cold weather surveillances (typically, between October 1 and March 31).

A11d) Inspection of equipment.

A11e) Inspection of HEPA filtered vacuums.

A11f) 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 contribution 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 contribution 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 ALARA PRINCIPLE

All activities involving potentially airborne radioactive materials in 2706-T shall be conducted in accordance with the ALARA principle. (WAC 246-247-040(5))

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

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 (WAC 246-247-040(5)).

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 2706T and/or 2706TA 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 ft³ (5.7E+08 mL)

Gross Alpha (c)	MDA (a) 1.1E-07 µCi	MDC (b) 2.0E-16 µCi/mL
Gross Beta (c)	MDA (a) 1.1E-06 µCi	MDC (b) 1.9E-15 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 ft³ (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.