



LB# 3902

AIR 14-305  
NOC 905

STATE OF WASHINGTON  
DEPARTMENT OF HEALTH  
OFFICE OF RADIATION PROTECTION  
309 Bradley Blvd., Suite 201 • Richland, Washington 99352  
TDD Relay Service: 1-800-833-6388

March 18, 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 was approved on March 12, 2014, as negotiated, according to the enclosed license for:

**Operation of the 200 Area Effluent Treatment Facility  
(Replaced NOC 822) (NOC 905; EU 301)**

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.

If you have any questions regarding this approval, please contact John Schmidt at (509) 946-3874.

Sincerely,

John Martell, Manager  
Radioactive Air Emissions Section

Enclosure: Applicable Portion of License (NOC 905; EU 301)

cc: (see next page)



Ms. Stacy Charboneau

March 18, 2014

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cc: Ruth Allen, WRPS  
Robert Anderson, MSA  
Matthew Barnett, PNNL  
Lee Bostic, BNI  
Cliff Clark, USDOE-RL  
Jack Donnelly, WRPS  
Rick Engelmann, CHPRC  
Dennis Faulk, EPA  
Phil Gent, Ecology  
Robert Haggard, BNI  
Dale Jackson, USDOE-RL  
Paul Karschnia, CHPRC  
Ed MacAlister, USDOE-RL  
Crystal Mathey, WDOH  
Ernest McCormick, WDOH  
Valarie Peery, Ecology  
Crystal Rau, Ecology  
John Schmidt, WDOH  
Maria Skorska, Ecology  
Jeff Voogd, WRPS  
Joan Woolard, WRPS  
Davis Zhen, EPA  
Environmental Portal  
RAES Tracking Line# 816; NOC 905; EU 301

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 Exhaust Velocity: 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** Monitoring stations N498, N499, N972, and N999

**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 (Replaced NOC ID 822)	AIR 14-305	3/12/2014	905

**Conditions (state only enforceable: 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)
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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)
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Contributes less than 0.1 mrem/yr to the MELI, 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)
Contributes less than 0.1 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 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)
Contributes less than 0.1 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 - 239/240		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes 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)
Contributes less than 0.1 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.		
Sr - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes 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)
Contributes less than 0.1 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 - 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 NOC 915 Diffuse and Fugitive Operations at LERF and ETF  
(WAC 246-247-040(5))

6) MONITORING

PCMs shall be taken to verify low emissions from the ETF stack using a probe in-stack arrangement. 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

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))