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AIR EMISSIONS
NOTICE OF CONSTRUCTION APPROVAL ORDER
CONDITIONS AND RESTRICTIONS

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1 **NOTICE OF CONSTRUCTION APPROVAL ORDER**
2 **CONDITIONS AND RESTRICTIONS**

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4 **REGULATORY AUTHORITY**

5
6 Pursuant to the Washington State Department of Ecology (Ecology) General Regulations for Air Pollution
7 Sources, Chapter 173-400 Washington Administrative Code (WAC), and Controls for new Sources of Toxic
8 Air Pollutants, Chapter 173-460 WAC, Ecology finds the following:
9

10 **FINDINGS**

- 11
- 12 1. The United States Department of Energy proposes to modify their existing facility (Hanford) located in
13 Richland, Washington.
 - 14
 - 15 2. The proposed project consists of eliminating two Type II emergency diesel generators from the
16 original design and replacing them with two turbine generators. Additionally, the proposed project
17 eases the annual operating hour restriction for each of the two diesel engine-driven fire pumps from
18 110 hours per year to 230 hours per year in order to support maintenance testing of WTP fire water
19 systems. All other WTP emissions units remain unchanged.
20
 - 21 3. DE02NWP-002 was originally issued on July 8, 2002. That permit authorized the construction and
22 operation of a pretreatment facility (PTF), a Low Activity Waste (LAW) vitrification facility, a High
23 Level Waste (HLW) vitrification facility, five steam generating boilers, four hot water boilers, a diesel
24 fire pump, and six emergency diesel generators.
25
 - 26 4. DE02NWP-002, Revision 1 was issued on November 24, 2003. That permit consisted of reducing the
27 number of LAW melters from three to two; an increase in the number of HLW melters from one to
28 two; a change in the size and number of steam generating boilers from nine to six, a change in the size
29 and number of emergency generators from six to three; and a change in the size and number of diesel
30 firewater pumps from one to two.
31
 - 32 5. Amendment 1 was issued August 17, 2004. That amendment added a new emission source from the
33 Balance of Facilities Non-Radioactive Liquid Waste Disposal System (NLD) Tank air stripper,
34 exempted emissions from low molarity nitric acid storage vessels located in the HLW and PTF,
35 eliminated the HLW HV-C2R emission unit, and clarified the LAW Facility melter off-gas emission
36 unit acid gas abatement technologies.
37
 - 38 6. Amendment 2 was issued on November 10, 2005 as an administrative amendment because there was
39 no increase in emissions. The purpose of the amendment was to eliminate the restriction on hours of
40 operation for the steam boilers and replace it with a restriction in the gallons of fuel burned, eliminated
41 the mass emission limit for the three emergency generators while keeping the pounds per hour limit
42 unchanged, and updated the address of Ecology office.
43
 - 44 7. Amendment 3 was issued on May 11, 2006 as an administrative amendment because there was no
45 increase in emissions. The purpose of the amendment was to provide relief from provisions of
46 permanent access to emission performance test ports and creating provisions for using temporary
47 platforms during emission performance testing.
48

- 1 8. Amendment 4 was issued November 13, 2006, as a response to a public comment during the first
2 renewal of the Draft Hanford Air Operating Permit. It added the 1100 Area Material Handling Facility
3 (formerly known as the Marshalling Yard) fugitive dust control to the permit.
4
- 5 9. A complete Notice of Construction (NOC) application for modification of the Approval Order for non-
6 radioactive air emissions for the Waste Treatment and Immobilization Plant (WTP) located East of the
7 Hanford site's 200 East Area was submitted on September 26, 2012.
8
- 9 10. Hanford is an existing major stationary source of a regulated pollutant.
10
- 11 11. The United States Department of Energy (USDOE) has elected to take federally enforceable limits on
12 the number of hours the two diesel fire pumps, the Type I emergency diesel generator, and the two
13 emergency turbine generators will operate each year.
14
- 15 12. Hanford is located in a Class II Area designated as "attainment" for the purpose of NOC permitting for
16 all pollutants.
17
- 18 13. The facility, if operated as herein required, will be in accordance with applicable rules and regulations,
19 as set forth in Chapter 173-400 WAC and 173-460 WAC, and the operation thereof, at the location
20 proposed, will not result in ambient air quality standards being exceeded.
21
- 22 14. Best Available Control Technology (BACT) for the control of NO_x and PM₁₀ emissions are covered by
23 PSD-02-01.
24
- 25 15. BACT for SO₂ is the use of Ultra-Low Sulfur Fuel (fuel oil with sulfur content less than 0.0015%
26 (15 ppm) by weight) in the boilers, emergency turbine generators, emergency diesel generator, and
27 diesel engine driven fire pumps.
28
- 29 16. Good combustion practices with reduced operation are determined to be BACT for the control of
30 CO emissions from the steam plant.
31
- 32 17. Good combustion practices with reduced operation are determined to be BACT for the control of
33 VOC emissions from the Type I emergency generators.
34
- 35 18. Good combustion practices with reduced operation are determined to be BACT for the control of
36 CO emissions from the Type I emergency generators.
37
- 38 19. Good combustion practices with reduced operation are determined to be BACT for the control of
39 VOC emissions from the emergency turbine generators.
40
- 41 20. Good combustion practices with reduced operation are determined to be BACT for the control of
42 CO emissions from the emergency turbine generators.
43
- 44 21. Good combustion practices with reduced operation are determined to be BACT for the control of
45 VOC emissions from the diesel fire pumps.
46
- 47 22. Good combustion practices with reduced operation are determined to be BACT for the control of
48 CO emissions from the diesel fire pumps.
49

- 1 23. Best Available Control Technology for Toxics (T-BACT) for the control of particulates and
2 aerosols is the use of High Efficiency Particulate Air (HEPA) filters.
3
- 4 24. The off-gases from Low Activity Waste (LAW) and High Level Waste (HLW) melters are
5 characterized as high temperature streams. Therefore, additional equipment, such as quenching and
6 mist elimination equipment will be required to protect the HEPA filters in the HLW and LAW
7 vitrification facility.
8
- 9 25. A caustic scrubber is T-BACT for the control of acid gases in the pretreatment plant.
10
- 11 26. A caustic scrubber is T-BACT for the control of SO_x gases in the LAW vitrification facility.
12
- 13 27. Carbon adsorbers are T-BACT for the control of halide acid gases in the LAW vitrification facility.
14
- 15 28. A silver mordenite adsorber is T-BACT for the removal of halogens (precursors to acid gases) in the
16 HLW vitrification facility off-gas.
17
- 18 29. Thermal catalytic oxidizers are T-BACT for the control of VOCs in the pretreatment, LAW
19 vitrification, and HLW vitrification plants.
20
- 21 30. Only trace amounts of lead will be released from the WTP. The lead emission is estimated to be
22 approximately 0.01 tons/yr (or 26 lbs/yr). This is below the PSD significance limit of 0.6 ton/yr (or
23 1,200 lb/yr).
24
- 25 31. The proposed project, if constructed and operated as herein required, will provide all known, available,
26 and reasonable methods of emission control.
27
- 28 32. Operation of the proposed facility at the specified site will generate the following estimated
29 emissions of criteria and toxic air pollutants:
30

POLLUTANT	TONS/YEAR
PM-10	Covered by PSD-02-01
Sulfur Oxides	11.46
Nitrogen Oxides	Covered by PSD-02-01
Volatile Organic Compounds, total	<38.00
Carbon Monoxide	75.20
Lead	0.01
Ozone Depleting Substances	0.00
Toxic Air Pollutants	Specified in original application

43 **THEREFORE, IT IS ORDERED** that the project as described in said Notice of Construction application,
44 as detailed in emission estimates, detailed in plans, specifications, and other information, submitted to the
45 Department of Ecology in reference thereto, is approved for construction, installation and operation,
46 provided compliance with the conditions and restrictions described below are met. This ORDER will be
47 identified as NOC APPROVAL ORDER **DE02NWP-002, Rev 2**.
48
49

1 APPROVAL CONDITIONS:**2 1.0 LAWS AND REGULATIONS**

3 All proposed activities associated with the construction and operation of the WTP by
4 DOE-ORP, referred herein as the permittee, shall comply with all requirements as
5 specified in:
6

- 7 • RCW Chapter 70.94, Washington Clean Air Act
- 8 • WAC Chapter 173-400, General Regulations for Air Pollution Sources
- 9 • WAC Chapter 173-460, Controls for New Sources of Toxic Air Pollutants
- 10 • Title 40 Code of Federal Regulations (CFR) Part 60, New Source Performance
11 Standards (NSPS): Subpart Dc (Standards of Performance for Small Industrial-
12 Commercial-Institutional Steam Generating Units)
- 13 • Title 40 Code of Federal Regulations (CFR) Part 60, New Source Performance
14 Standards (NSPS): Subpart KKKK (Standards of Performance for Stationary
15 Combustion Turbines)
- 16 • Title 40 Code of Federal Regulations (CFR) Part 63, National Emissions Standards
17 for Hazardous Air Pollutants (NESHAPS): Subpart YYYY (NESHAPS Stationary
18 Combustion Turbines)

19 2.0 EMISSION LIMITS**20 2.1 Opacity****21 2.1.1 Emission Limits**

22 **2.1.1.1** Each Pretreatment, HLW and LAW process off-gas exhaust stack shall not exceed five
23 percent.

24 **2.1.1.2** Exhaust stacks from the boilers, emergency turbine generators, emergency diesel
25 generator, and diesel fire pumps shall not exceed 10 percent.

26 2.1.2 Compliance Demonstration

27 **2.1.2.1** Compliance with condition 2.1.1 and condition 2.1.2 will be conducted over a six minute
28 average as measured by EPA Reference Method 9, or an equivalent method approved in
29 advance by Ecology. A certified opacity reader shall read and record the opacity
30 concurrent with any source testing.

31 2.2 Ultra-Low Sulfur Diesel (ULSD)**32 2.2.1 Emission Limits**

33 **2.2.1.1** All boilers, emergency diesel generator, emergency turbine generators and the diesel fire
34 pump shall be fired on ULSD.

35 **2.2.1.2** ULSD means fuel oil with a sulfur content of 0.0015 % (15 ppm) or less by weight.

36 2.2.2 Compliance Demonstration

37 **2.2.2.1** Compliance shall be monitored by maintaining records of fuel purchases.

38 2.3 Steam Generating Boiler Operation Hours**39 2.3.1 Emission Limits**

40 **2.3.1.1** The operation of the six steam generating boilers shall not exceed an annual aggregated

- 1 fuel consumption limit of 13,400,000 gallons per year summed daily for the previous 365
2 days.
- 3 **2.3.2 Compliance Demonstration**
- 4 **2.3.2.1** Compliance shall be determined by maintaining fuel purchase records.
- 5 **2.3.2.2** Compliance shall be monitored by including a written statement in each semiannual
6 report of the total fuel consumption over the previous 12 months.
- 7 **2.4 Emergency Turbine Generators and Diesel Generators**
- 8 **2.4.1 Emission Limits**
- 9 **2.4.1.1** Each emergency turbine generator and emergency diesel generator shall not operate for
10 more than 164 hours per year on a 12 month rolling summation calculated monthly.
- 11 **2.4.2 Compliance Demonstration**
- 12 **2.4.2.1** Compliance shall be monitored by installing and operating non-resetable totalizers on
13 each generator.
- 14 **2.4.2.2** Compliance shall be monitored by including a written statement in each semiannual
15 report of the hours the emergency generators operated in each of the six (6) months
16 covered by the report and the summation of hours operated over the previous 12 months.
- 17 **2.5 Emergency Diesel Fire Pump**
- 18 **2.5.1 Emission Limits**
- 19 **2.5.1.1** The operation of each emergency diesel fire pump shall not operate for more than 230
20 hours per year on a 12 month rolling summation calculated monthly.
- 21 **2.5.2 Compliance Demonstration**
- 22 **2.5.2.1** Compliance shall be determined by installing and operating a non-resetable totalizer on
23 each diesel fire pump.
- 24 **2.5.2.2** Compliance shall be monitored by including a written statement in each semiannual
25 report of the hours the diesel fire pumps operated in each of the six (6) months covered
26 by the report and the summation of hours operated over the previous 12 months.
- 27 **3.0 TOTAL EMISSION LIMITS**
- 28 **3.1** The activities described in the NOC application will be permitted with the control
29 technologies proposed, provided that the total emissions from all activities will not result
30 in exceedance of WAC 173-460 ASILs or result in criteria pollutant emission increases.
- 31 **3.2** A new NOC will be required, if total emissions of toxic air pollutants exceed the values
32 specified in tables 4, 5 and 6 of the original application. These values shall be confirmed
33 by emission calculations, for indicator constituents, derived from waste characterization
34 data obtained through implementation of the Ecology approved Regulatory Data
35 Objectives Supporting Tank Waste Remediation System Privatization Project (PNNL-
36 12040). The mass feed rates for the indicator constituents will be verified to be less than
37 or equal to the mass feed rates used in the *Integrated Emissions Baseline Report for the*
38 *Hanford Tank Waste Treatment and Immobilization Plant (24590-WTP-RPT, PO-03-*
39 *008, Rev 0*. Results of any such calculations will be maintained on file and made
40 available upon inspection/request.

- 1
2 **4.0 GENERAL TESTING REQUIREMENTS**
- 3 **4.1** Within 180 days of achieving the optimized feed rate of simulant at which the LAW and
4 HLW vitrification facilities will be operated, the permittee shall demonstrate initial
5 compliance through a performance demonstration conducted per an Ecology approved
6 Performance Demonstration Plan
- 7 **4.1.1** The permittee shall utilize the Performance Demonstration Plan requirements identified
8 in the Dangerous Waste Portion of the Resource Conservation and Recovery Act Permit
9 for the Treatment, Storage, and Disposal of Dangerous Waste Hanford Waste Treatment
10 and Immobilization Plant (DWP), condition III.10.H.5.f (LAW) and III.10.J.5.f (HLW).
- 11 **4.1.2** Ecology shall be notified at least 30 days prior to the test and invited to participate in the
12 test activities at least one week prior to testing.
- 13 **4.2** Testing per the initial compliance testing identified in 4.1 shall be conducted in
14 accordance with the frequency identified in the DWP, conditions III.10.I.1.h (LAW) and
15 III.10.K.1.h (HLW).
- 16 **4.3** The permittee shall provide to Ecology written reports of all compliance testing
17 associated with the 4.1, 4.2, and 4.5 within 180 days of the test date.
- 18 **4.4** Sampling ports and platforms for testing must be provided by the permittee.
- 19 **4.4.1** The ports must meet the requirements of Title 40 Code of Federal Regulations Part 60
20 (40 CFR 60), Appendix A, Method 1, 7/1/00.
- 21 **4.4.2** Adequate and safe access to the test ports must be provided.
- 22 **4.5** Within 180 days of initial startup, boiler source testing shall be conducted according to
23 the following methods, unless an alternate method has been proposed in writing by the
24 permittee and approved by Ecology in writing in advance of the testing.
- 25 **4.5.1** Carbon Monoxide – EPA Reference Method 10, 40 CFR 60, Appendix A, 7/1/00
- 26 **4.5.2** Volatile Organic Compounds (VOC) – EPA Reference Method 18, 40 CFR 60,
27 Appendix A, 7/1/00
- 28 **4.5.3** Sulfur Dioxide – EPA Reference Method 6C, 40 CFR 60, Appendix A, 7/1/00.
- 29 **4.6** During the boiler source testing described in 4.5 above, a direct-reading measurement
30 device for carbon monoxide with a minimum measurement accuracy of five percent or
31 less shall take readings according to methods proposed by the permittee and approved by
32 Ecology in writing in before commencing initial start-up. The direct-reading instrument
33 shall be calibrated for future use using the results of the source testing.
- 34 **5.0 EMISSION CONTROL MONITORS**
- 35 Emissions from boilers shall be monitored for CO and Oxygen by means of a portable
36 emissions analyzer (direct-reading measurement device) at initial startup and after
37 routinely scheduled maintenance activities and burner/control adjustments such as
38 fuel/air metering ratio control and oxygen trim control.
- 39 **6.0 MANUALS**
- 40 **6.1** Within 90 days of startup DOE shall identify operational parameters and practices that
41 will constitute proper operation of the Pretreatment facility, LAW vitrification facility,

1 the HLW vitrification facility, the Laboratory, and the Balance of Facilities that have the
2 potential to affect emissions to the atmosphere, including but not limited to, the steam
3 boilers, emergency turbine generators and the emergency diesel generator.

4 **6.1.1** These operational parameters and practices shall be included in operation and
5 maintenance (O&M) manual(s) for the facility.

6 **6.1.1.1** The O&M manuals shall be maintained and followed by the DOE.

7 **6.1.1.2** The O&M manuals shall be available for review by state, federal and local agencies.

8 **6.1.1.3** The O&M manuals shall be updated to reflect any modifications of the process or
9 operating procedures.

10 **6.1.2** The Pretreatment facility, LAW vitrification facility, the HLW vitrification facility, the
11 Laboratory, steam boilers, emergency turbines, emergency diesel generator, and the
12 Balance of Facilities shall be properly designed, operated and maintained.

13 **6.1.3** Failure to follow the requirements of the O&M Manuals and the adequacy of the O&M
14 Manuals will be two of the factors considered by Ecology in determining whether these
15 sources are properly designed, operated and maintained

16 **6.1.4** Emissions that result from a failure to follow the requirements of the O&M manuals may
17 be considered credible evidence that emission violations have occurred.

18 **7.0 INITIAL NOTIFICATIONS & SUBMITTALS**

19 All notifications and submittals required under these Approval Conditions shall be sent
20 to:

21 Washington State Department of Ecology
22 Nuclear Waste Program
23 3100 Port of Benton Boulevard
24 Richland, Washington 99254
25

26 **8.0 MONITORING AND RECORDKEEPING**

27 Specific records shall be kept on-site by the Permittee and made available for inspection
28 by Ecology upon request. The records shall be organized in a readily accessible manner
29 and cover a minimum of the most recent sixty (60) month period. The records to be kept
30 shall include, but not be limited to, the following:
31

32 **8.1** Calculations of TAPs emissions derived from waste feed characterization.

33 **8.2** Calculations of ammonia emissions from LAW and HLW.

34 **8.3** Records of monthly fuel purchases and use and certification, from the fuel distributor,
35 stating the fuel supplied meets the sulfur requirements.

36 **8.4** Logs of boiler tune-ups and significant boiler maintenance activities will be maintained.

37 **8.5** Records of actions taken to minimize fugitive dust in accord with General Condition 9.8
38 including establishment of routine or *ad hoc* dust suppression or soil fixative placement.
39

1 **9.0 GENERAL CONDITIONS**

2 All plans, specifications, and other information submitted to Ecology relative to this
3 project and any authorizations or approvals or denials in relation thereto shall be
4 incorporated herein and made a part thereof.

5 **9.1 Availability of Order and O&M Manual(s):** Legible copies of this Order and the
6 O&M manual(s) shall be available to employees in direct operation of the generator and
7 be available for review upon request by Ecology.

8 **9.2 Discontinuing Construction or Operations:** It shall be grounds for rescission of
9 this approval if physical construction or operation is discontinued for a period of
10 eighteen (18) months or more. Ecology may extend the 18-month period upon request.

11 **9.3 Compliance Assurance Access:** Access to the source by representatives of
12 Ecology or the EPA shall be permitted upon request. Failure to allow such access is
13 grounds for enforcement action under the Federal Clean Air Act or the Washington State
14 Clean Air Act, and may result in revocation of this Approval Order.

15 **9.4 Equipment Operation:** Operation of the generator and related equipment shall be
16 conducted in compliance with all data and specifications submitted as part of the NOC
17 application and in accordance with the O&M manual, unless otherwise approved in
18 writing by Ecology.

19 **9.5 Activities Inconsistent with the NOC Application and this Approval Order:**
20 Any activity undertaken by the permittee or others, in a manner that is inconsistent with
21 the NOC application and this determination, shall be subject to Ecology enforcement
22 under applicable regulations.

23 **9.6 Obligations under Other Laws or Regulations:** Nothing in this Approval Order
24 shall be construed to relieve the permittee of its obligations under any local, state or
25 federal laws or regulations.

26 **9.7 Modification to Facility or Operating Procedures:** Any modification to any
27 equipment or operating procedures, contrary to information provided in the NOC
28 application, shall be reported to Ecology at least sixty (60) days before such
29 modification. Such modification may require a new, or amended, NOC approval Order.

30 **9.8 Fugitive Dust Control:** The Construction Phase Fugitive Dust Control Plan prepared
31 using EPA and Ecology guidelines, shall address fugitive dust control at the WTP
32 construction site adjacent to the Hanford 200 Area and the Material Handling Facility. A
33 copy of this plan shall be maintained onsite at all times in a place known to facility
34 employees that are responsible for complying with the requirements contained therein and
35 shall be retrievable by those employees at all times when activities regulated by the
36 documents are occurring. These documents shall be made available to Ecology upon
37 request.

38 **9.9** A two (2) month testing and break-in period is allowed, after any part or portion of this
39 project becomes operational, to make any changes or adjustments required to comply
40 with applicable rules and regulations pertaining to air quality and conditions of operation
41 imposed herein. Thereafter, any violation of such rules and regulations, or of the terms
42 of this approval, shall be subject to the sanctions provided in Chapter 70.94 RCW.

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44

YOUR RIGHT TO APPEAL

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do all of the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
<p>Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503</p>	<p>Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608</p>

This Authorization may be modified, suspended, or revoked in whole, or in part, for cause including, but not limited to, the following:

1. Violation of any terms or conditions of this authorization;
2. Obtaining this authorization by misrepresentation, or failure to fully disclose all relevant facts.

The provisions of this authorization are severable and, if any provision of this authorization, or application of any provisions of this authorization to any circumstance, is held invalid, the application of such provision to their circumstances, and the remainder of this authorization, shall not be affected thereby.

The New Source Review Fee has been assessed according to WAC 173-455. No approval of a permit or service for any activity covered in this Order will be valid until the required fee is paid in full.

DATED at Richland, Washington, this XXth day of February 2013.

PREPARED AND REVIEWED BY:

Philip M. Gent, P.E.

APPROVED BY:

Jane A. Hedges
Program Manager
Nuclear Waste Program