

Statement of Basis

**Permit to Construct No. P-2011.0124
Project No. 60932**

**U.S. Department of Energy, Idaho Operations Office
Idaho National Laboratory (INL)
Idaho Nuclear Technology and Engineering Center (INTEC)
Idaho Falls, Idaho**

Facility ID No. 023-00001

Final

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The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01. et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
Btu	British thermal units
CEMS	continuous emission monitoring systems
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CO	carbon monoxide
DEQ	Department of Environmental Quality
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
FAST	Fluorinel and Storage Facility
gr	grain (1 lb = 7,000 grains)
HAP	hazardous air pollutants
HEPA	High Efficiency Particulate Air filters
HMA	hot mix asphalt
hp	horsepower
hr/yr	hours per year
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
km	kilometers
lb/hr	pounds per hour
lb/qtr	pound per quarter
LET&D	Liquid Effluent Treatment and Disposal Facility
m	meters
MACT	Maximum Achievable Control Technology
mg/dscm	milligrams per dry standard cubic meter
MMBtu	million British thermal units
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NAICS	North American Industry Classification System
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
NWCF	New Waste Calcining Facility
PAPS	Process Atmospheric Protection System
PC	permit condition
PM	particulate matter
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTC	permit to construct

PTC/T2	permit to construct and Tier II operating permit
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
scf	standard cubic feet
SCL	significant contribution limits
SIC	Standard Industrial Classification
SO ₂	sulfur dioxide
SO _x	sulfur oxides
T/yr	tons per consecutive 12-calendar month period
TAP	toxic air pollutants
U.S.C.	United States Code
UTM	Universal Transverse Mercator
VAPS	Ventilation Air Protection System
VOC	volatile organic compounds
VOG	vessel off-gas
yd ³	cubic yards
µg/m ³	micrograms per cubic meter

FACILITY INFORMATION

Description

Idaho National Laboratory (INL) is a multipurpose national laboratory owned by the U.S. Government. The INTEC is one of nine operational areas located in the southwestern portion of INL. Major operating facilities at the INTEC include both storage and treatment facilities. Spent nuclear fuel is stored in pools and dry storage. Calcine (dry granular waste) is stored in bins and liquid sodium-bearing waste is stored in USTs. The Liquid Effluent Treatment & Disposal (LET&D) facility prevents radioactive waste from being discharged to the percolation ponds and recover nitric acid for reuse. The Fluorinel and Storage Facility (FAST) is where spent nuclear fuel is received and stored.

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

December 1, 2003	P-020521, INTEC, Nitrogen Oxide Sources, Permit status (A, but will become S upon issuance of this permit)
October 18, 1999	PTC No. 023-00001, INTEC, Nitrogen Oxide Sources, Permit status (S)
February 13, 1995	PTC No. 023-00001, Nitrogen Oxide Sources, Permit status (S)
November 17, 1994	PTC No. 023-00001, Nitrogen Oxide Sources, Permit status (S)
May 20, 1988	PTC No. 0340-0001-300, INTEC, Permit status (S)

Application Scope

This PTC is a revision of an existing PTC at a Tier I facility. The applicant has proposed to update permit conditions for the Fluorinel and Storage Facility (FAST), the Liquid Effluent Treatment & Disposal (LET&D), Ventilation Air System, and the Process Off-Gas System to reflect current operating conditions.

In addition, the applicant has proposed the following amendments to the existing PTC:

- Remove the three existing Naval Reactor Facilities (NRF) boilers from the PTC. These sources were installed in 1961 prior to the promulgation of the Clean Air Act amendments of 1977 and should have been exempt in accordance with 40 CFR 52.21(i).
- Remove the two existing Battelle Energy Alliance, LLC (BEA) boilers from the PTC. These sources are identified as qualifying for exemptions under IDAPA 58.01.01.220, 221, and 223.
- Remove the remaining boilers identified in the INL-wide NO_x sources of the PTC. These sources have been removed from service and will no longer be operated.

Application Chronology

September 14, 2011	DEQ received an application.
September 29, 2011	DEQ received an application fee.
October 24, 2011	DEQ determined that the application was complete.
November 4, 2011	DEQ made available the draft permit and statement of basis for peer and regional office review.
November 18, 2011	DEQ made available the draft permit and statement of basis for applicant review.
December 27, 2011	DEQ received the permit processing fee.
December 30, 2011	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Devices

Table 1 EMISSIONS UNIT AND CONTROL DEVICE INFORMATION

Source Description	Control Equipment Description	Emissions Point ID No. and Description
Fluorinel and Storage Facility (FAST)	Four parallel filter banks each containing prefilters and 24 HEPA filters	FAST stack CPP-767-001 Exit height: 160 ft Exit diameter: 5.4 ft Exit flow rate: 60,000 scfm
Liquid Effluent Treatment and Disposal (LET&D)	Two LET&D mist eliminators and two banks of LET&D HEPA filters	Main Stack CPP-708 Exit height: 250 ft Exit diameter: 6.5 ft Exit flow rate: 70,000 scfm
Ventilation Air System	VAPS fiberglass bed prefilter and 26 banks of four VAPS HEPA filters	Main Stack CPP-708 Exit height: 250 ft Exit diameter: 6.5 ft Exit flow rate: 70,000 scfm
Off-Gas System	PAPS mist eliminator, a single stage of three of five PAPS HEPA filters, VOG mist eliminator, one of two VOG HEP filters, NWCF HEPA filter (one or two of three banks)	Main Stack CPP-708 Exit height: 250 ft Exit diameter: 6.5 ft Exit flow rate: 70,000 scfm

Emissions Inventories

This permitting action does not cause an increase in criteria pollutants or toxic air pollutants. With the removal of the INL wide NO_x sources either through exemption or removal from service, all NO_x emissions limits in the existing permit will be removed.

Ambient Air Quality Impact Analyses

Because the proposed project is to remove the INL wide NO_x sources from the current PTC, this action will not result in an increase in any pollutant emissions. Therefore, no modeling was performed.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Butte County, which is designated as attainment or unclassifiable for PM_{2.5}, PM₁₀, SO₂, NO₂, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201

Permit to Construct Required

The permittee has requested that a PTC revision be issued to the facility. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625

Visible Emissions

The sources of PM₁₀ emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by complying with the corresponding periodic monitoring/inspection and recordkeeping requirements specified in the INL Tier I operating permit.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301

Requirement to Obtain Tier I Operating Permit

The INL is classified as a major facility under the Title V program and has been issued a Tier I operating permit for this purpose. Refer to the Tier I permit Statement of Basis for details regarding the facility classification. This PTC revision is issued pursuant to Section 209.05 of the rules which covers PTC procedures for Tier I sources. This PTC is prepared under Section 209.05.a, and the changes made by this revised PTC will be included in the forthcoming Tier I renewal permit which is currently under review by DEQ.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 Prevention of Significant Deterioration of Air Quality

The facility is a major facility for the purposes of the federal prevention of significant deterioration (PSD) program as referenced by IDAPA 58.01.01.205 because the facility emits or has the potential to emit a regulated criteria air pollutant (NO_x) in amounts greater than or equal to the major threshold criteria of 250 T/yr.

NSPS Applicability (40 CFR 60)

This permit revision for the removal of INL wide NO_x sources is not subject to any NSPS requirements.

NESHAP Applicability (40 CFR 61)

The INTEC facility is subject to the NESHAP requirements in 40 CFR 61 Subpart H, National Emission Standards for Emissions of Radionuclides other than Radon from Department of Energy Facilities. Applicability of these requirements does not change as a result of this PTC revision.

It is noted that EPA has retained authority to administer Subpart H and has not delegated this authority to DEQ, therefore, any approvals or interpretations of this regulation will be managed by EPA. The Tier I permit already contains site-wide requirements to meet the NESHAPS regulations under 40 CFR 61 Subpart H. Similar permit conditions are included in this permit as well.

MACT Applicability (40 CFR 63)

For emergency generators and fire pumps located at the INL facility, applicability of 40 CFR 63 Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, is addressed under the pending renewal of the INL site-wide Tier I operating permit. Refer to the Tier I renewal permit and its Statement of Basis for details.

For boilers located at the INL facility, applicability of 40 CFR 63 Subpart DDDDD, National Emissions Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters, is addressed under the pending renewal of the INL site-wide Tier I operating permit. Refer to the Tier I renewal permit and its Statement of Basis for details.

Permit Conditions Review

This section describes the permit conditions for this initial permit or only those permit conditions that have been added, revised, modified or deleted as a result of this permitting action. All permit conditions have been renumbered to accommodate the current permit to construct template.

Existing Permit Condition 1

Table 1.1 lists all sources of regulated emissions in this PTC.

Table 1.1 REGULATED EMISSIONS SOURCES

Permit Section	Source Description	Emissions Control(s)
2	<i>Fluorinel and storage facility (FAST)</i>	<i>Four parallel filter banks, each containing prefilters and 24 HEPA filters</i>
3	<i>LET&D</i>	<i>Two LET&D mist eliminators and two banks of LET&D HEPA filters</i>
3	<i>Ventilation air system</i>	<i>VAPS fiberglass bed prefilter and 26 banks of four VAPS HEPA filters</i>
3	<i>Process off-gas system</i>	<i>PAPS mist eliminator, a single stage of three PAPS HEPA filters, DOG mist eliminator, DOG non-HEPA filtration, VOG mist eliminator, VOG HEPA filter, NWCF high efficiency cyclone, NWCF wet scrubber system, NWCF HEPA filter (4 banks), Bin Sets 4, 5, 6, and 7 Non-HEPA Filtration (1 or 2 filters)</i>
4	<i>INEEL-wide NO_x sources</i>	<i>None</i>

Revised Permit Condition 4

The emission sources regulated by this permit are listed in the following table.

Table 1 REGULATED SOURCES

Source Descriptions	Emission Controls
<i>Fluorinel and Storage Facility (FAST)</i>	<i>Four parallel filter banks each containing prefilters and 24 HEPA filters</i>
<i>Liquid Effluent Treatment and Disposal (LET&D)</i>	<i>Two LET&D mist eliminators and two banks of LET&D HEPA filters</i>
<i>Ventilation Air System</i>	<i>VAPS fiberglass bed prefilter and 26 banks of four VAPS HEPA filters</i>
<i>Off-Gas System</i>	<i>PAPS mist eliminator, a single stage of three of five PAPS HEPA filters, VOG mist eliminator, one of two VOG HEPA filters, NWCF HEPA filter (one or two of three banks)</i>

The Regulated Sources Table has been updated to correctly reflect the emission control devices and remove the INL wide NO_x sources.

Existing Permit Condition 2.1

Process Description

Receipt, movement, and general handling of nuclear fuel is associated with the storage of fuel in the FAST (Fluorinel and storage) facility. Storage of fuel is maintained in large water-filled basins. Areas in the building and equipment associated with the past practice of dissolving fuel are shutdown.

Revised Permit Condition 5

Receipt, movement, and general handling of spent nuclear fuel is associated with the storage of fuel in the FAST (Fluorinel and Storage Facility). Storage of fuel is maintained in large water-filled basins. Areas in the building and equipment associated with the spent nuclear fuel dissolution mission were shut down following the cessation of fuel reprocessing operations. The Fluorinel Dissolution Process Area is currently being used for the Remote-Handled Transuranic operations.

The permit condition has been updated to reflect the current process description.

Removed Permit Conditions 2.3 and 2.4

FAST Equipment Listing

- 2.3.1 *FAST stack*
- 2.3.2 *FAST fuel storage basin*
- 2.3.3 *FAST dissolution cell*
- 2.3.4 *HEPA filters (two in series) at the FAST dissolution cell*
- 2.3.5 *FAST FM area vessels*
- 2.3.6 *Pre-filter stages (four in parallel)*
- 2.3.7 *HEPA filtration stages (four in parallel)*

FAST Stack Specifications

The FAST stack (CPP-767-001) has the following specifications:

- Stack Height - 160.0 feet*
- Stack Diameter - 5.4 feet*
- Flow Rate - 92,000 acfm (actual cubic feet per minute)*

These permit conditions were removed because they were considered redundant to the information listed in permit conditions 5 and 6.

Existing Permit Condition 2.5

Emissions Limits

Emissions of radionuclides from the FAST stack shall not, by themselves, or in combination with emissions from other INEEL sources, exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent in excess of 10 millirem per year, in accordance with 40 CFR 61, Subpart H. Doses due to radon-220 and radon-222, and their respective decay products are excluded from this limit.

Revised Permit Condition 7

40 CFR 61 Subpart H NESHAP Radionuclide Dose Impact Limit

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 millirem per year (mrem/yr) in accordance with 40 CFR 61.92.

The Subpart H NESHAP permit conditions were revised in the PTC to maintain consistency with other PTCs recently issued for the INL and for consistency with the INL facility-wide Tier I operating permit.

New Permit Condition 8

Opacity Limit

Emissions from any stack, vent, or functionally equivalent opening associated with the FAST, shall not exceed 20% opacity for a period or periods aggregating more than three minutes in any 60-minute period as required by IDAPA 58.01.01.625. Opacity shall be determined by the procedures contained in IDAPA 58.01.01.625.

The 20 percent opacity standard applies to all point sources of emissions.

Existing Permit Conditions 2.6 and 2.7

Radionuclide Requirements

The permittee shall maintain and operate instrumentation in accordance with 40 CFR 61, Subpart H, to verify proper operation of the air pollution control equipment installed and ensure that the limits in Permit Condition 2.5 are met.

HEPA Filter Requirements

The permittee shall install, operate, and maintain at least one stage of HEPA filters having a minimum particle removal efficiency of no less than 99.97%. The permittee shall maintain and operate instrumentation to measure the pressure drop across the filter stages. HEPA filter efficiency shall be tested after installation and on an annual basis according to the ANSI N510 testing standard. All HEPA filters must be pretested and certified prior to installation and must meet government performance specifications and overpressure and rough handling requirements per MIL-F-51068. The permittee shall maintain written procedures in place which specify the conditions which require change out of the filters.

Revised Permit Condition 9

HEPA Filter Requirements

- 9.1 *Each HEPA filter shall have a minimum particle removal efficiency of no less than 99.97%.*
- 9.2 *The permittee shall maintain and operate instrumentation to measure the pressure drop across the filter(s). HEPA filter efficiency shall be tested according to the ASME N510 and/or N511 testing standard(s). Records of any testing performed shall be maintained in accordance with the General Provisions of this permit.*
- 9.3 *The permittee shall maintain written documentation to ensure compliance with this permit. This shall include, at a minimum, written procedures that specify how the pressure drop across the filter will be measured, the frequency of pressure drop monitoring, and the conditions that require change-out of the filters.*

The Subpart H NESHAP permit conditions were revised in the PTC to maintain consistency with other PTCs recently issued for the INL and for consistency with the INL facility-wide Tier I operating permit.

Existing Permit Condition 2.8

Radionuclide Monitoring

The permittee shall perform radionuclide sampling and dose calculations as specified by 40 CFR 61, Subpart H. Effective dose equivalents to members of the public shall be calculated using EPA-approved sampling procedures and EPA model CAP-88PC or other EPA-approved models.

Revised Permit Condition 10

40 CFR 61 Subpart H NESHAP Radionuclide Monitoring

In accordance with 40 CFR 61.93, the permittee shall determine radionuclide emissions and calculate effective dose equivalent values to members of the public using EPA-approved methods.

The Subpart H NESHAP permit conditions were revised in the PTC to maintain consistency with other PTCs recently issued for the INL and for consistency with the INL facility-wide Tier I operating permit.

Existing Permit Condition 2.9

HEPA Filter Monitoring

The permittee shall monitor the pressure drop across the HEPA filter stages.

Revised Permit Condition 11

HEPA Filter Pressure Drop Monitoring

When in operation, the permittee shall monitor and record the pressure drop across the HEPA filter stages of the HEPA filter systems at least once per day according to written procedures.

The Subpart H NESHAP permit conditions were revised in the PTC to maintain consistency with other PTCs recently issued for the INL and for consistency with the INL facility-wide Tier I operating permit.

Existing Permit Condition 2.10

Annual Report

The permittee shall submit an annual report by July 1 that provides the results of dose calculations based on collected INEEL emissions during the preceding calendar year (January 1 to December 31).

Revised Permit Condition 12

40 CFR 61 Subpart H NESHAP Annual Report

The permittee shall submit annual reports and maintain records documenting radionuclide emissions and effective dose equivalent values in accordance with 40 CFR 61.94 and 40 CFR 61.95.

The Subpart H NESHAP permit conditions were revised in the PTC to maintain consistency with other PTCs recently issued for the INL and for consistency with the INL facility-wide Tier I operating permit.

Existing Permit Condition 3.1

Process Description

The emissions exhausting from the main stack are derived from three separate systems: the Liquid Effluent Treatment and Disposal (LET&D) facility, the ventilation air system, and the process off-gas system.

LET&D Process and Control Description

The LET&D facility treats the Process Equipment Waste (PEW) Evaporator condensate, which is a low-level liquid waste (LLLW), by an acid fractionation process. The acid portion or bottoms are used at the New Waste Calcining Facility (NWCF) or stored in the Tank Farm. The remaining gaseous overheads are discharged to the main stack.

The gaseous overheads, produced in the fractionation process, are processed through one of two parallel off-gas trains. The LET&D off-gas trains consist of a mist eliminator, a superheater, two banks of HEPA filters, and a blower. Liquid droplets are removed by mist eliminators and returned to the fractionators. The gas is then heated to ensure there is no liquid water in the stream. Any solids are removed by HEPA filters. There are two HEPA filter banks, one of which is required to be operating whenever a fractionator is operated. Each bank consists of two filter stages in series, each stage consisting of two filters. The blower provides the motive force for the effluent. After the blower, the effluent is discharged to the main stack.

Ventilation Air System Process and Control Description

The ventilation air system is comprised of ventilation air from CPP-601, 602, 604, 640, and 1618. This air is used to heat, ventilate, and to provide contamination control for the above facilities. This air, which comprises the bulk of the flow to the main stack, passes through the Ventilation Atmospheric Protection System (VAPS). This gas cleanup system consists of a fiberglass bed prefilter; HEPA filters arranged in 26 parallel banks of four filters; and three blowers; two of which normally operate. The blowers provide the motive force for the system and exhaust the air to the main stack.

Off-Gas Process and Control Description

The flow from Process Atmospheric Protection System (PAPS) is exhausted to the main stack. The PAPS flow is comprised of three off-gas systems: the dissolver off-gas (DOG), the vessel off-gas (VOG), and the waste calcining off-gas. The PAPS system consists of a demister, superheater, and a single stage of three parallel HEPA filters. From the PAPS, the off-gas is exhausted to the main stack.

The flow in the DOG system is comprised of off-gas from fuel processing facilities in CPP-601 and the Rare Gas Plant in CPP-604. These facilities are not being operated due to the current mission. The vacuum provided by the DOG system is used for contamination control. The DOG system consists of a mist eliminator, a superheater, a single stage of non-HEPA filters, and a blower. The blower effluent is discharged to the PAPS and then the main stack.

The flow in the VOG system is comprised of off-gas from the High-Level Liquid Waste (HLLW) Tank Farm (11 large waste tanks and numerous other small tanks, valve boxes, etc.), the PEW evaporator, fuel processing facilities in CPP-601 and the Pilot Plants in CPP-620 and 637. The system provides vacuum and contamination control to vessels in the connected facilities. The VOG system consists of a mist eliminator, a superheater, and a HEPA filter. In past practice, the Pilot Plant off-gasses were always combined with CPP-601 off-gas prior to passing through the VOG system. In the future, the 620/637 Pilot Plants will also have the capability of exhausting off-gas directly to the main stack after local HEPA filtration.

The flow in the NWCF and WCF Process Off-gas system (POG) is comprised of off-gas from the NWCF and WCF. The NWCF and the WCF were built to reduce HLLW to a smaller volume and more stable solid form known as calcine. The NWCF replaced the WCF and is the only active calciner.

High Level Liquid Waste from the Tank Farm is solidified in a fluidized-bed calciner at about 500 degrees Celsius using liquid fuel (typically kerosene) and oxygen to produce heat. The off-gas from the calciner vessel is cleaned by a high-efficiency cyclone, liquid scrub system, and four parallel banks of HEPA filters. One or two of the HEPA filter banks are on-line during operation. Each filter bank is made up of three stages, each with two HEPA filters. Each filter bank provides the removal efficiency equivalent to two stages of HEPA filtration at 99.97% each, during test conditions.

The calcined waste produced at the NWCF is transported by a pneumatic system to the Calcined Solids Storage Bins. The air used to transport the calcine is vented back through the NWCF and is discharged to the main stack. There are currently five sets of filled bins. The sixth bin set is being filled and the seventh is being prepared for service. Each bin set consists of stainless steel bins inside a concrete vault. Bin sets 1, 2, and 3 are ventilated through the PAPS via the WCF off-gas line. Bin sets 4, 5, 6, and 7 have pressure relief systems which relieve through filters to the atmosphere when they are isolated from the NWCF calcine transfer system.

Revised Permit Condition 13

The emissions exhausting from the main stack are derived from three separate systems: the Liquid Effluent Treatment and Disposal (LET&D) facility, the ventilation air system, and the process off-gas system.

LET&D Process and Control Description

The LET&D facility treats the Process Equipment Waste (PEW) Evaporator condensate, which is a low-level liquid waste (LLLW), by an acid fractionation process. The acid portion or bottoms are recycled back to the PEW Evaporator System. The remaining gaseous overheads are discharged to the main stack.

The gaseous overheads, produced in the fractionation process, are processed through one of two parallel off-gas trains. The LET&D off-gas trains consist of a mist eliminator, a superheater, two banks of HEPA filters, and a blower. Liquid droplets are removed by mist eliminators and returned to the fractionators. The gas is then heated to ensure there is no liquid water in the stream. Any solids are removed by HEPA filters. There are two HEPA filter banks, one of which is required to be operating whenever a fractionator is operated. Each bank consists of two filter stages in series, each stage consisting of two filters. The blower provides the motive force for the effluent. After the blower, the effluent is discharged to the main stack.

Ventilation Air System Process and Control Description

The ventilation air system is comprised of ventilation air from CPP-604, 649, and 1618. This air is used to heat, ventilate, and to provide contamination control for the above facilities. This air passes through the Ventilation Atmospheric Protection System (VAPS). This gas cleanup system consists of a fiberglass bed prefilter; HEPA filters arranged in 26 parallel banks of four filters; and two blowers; one of which normally operate. The blowers provide the motive force for the system and exhaust the air to the main stack. Atmospheric bleed-in air is also added to provide sufficient air for blower and stack monitoring operation. It enters the VAPS downstream of the fiberglass bed prefilter.

Off-Gas Process and Control Description

The flow from Process Atmospheric Protection System (PAPS) is exhausted to the main stack. The PAPS flow is comprised of two off-gas systems: the vessel off-gas (VOG) from the Tank Farm and Process Equipment Waste Evaporator, and the New Waste Calcining Facility (NWCF) vessel and process off-gas (also includes Bin Set passive "breathing"). The PAPS system emission controls consist of a mist eliminator, a superheater, and a single stage of three of five parallel HEPA filters.

The flow in the VOG system is comprised of off-gas from the Tank Farm (4 large waste tanks and several other small tanks), and the PEW Evaporator System. The system provides vacuum and contamination control to vessels in the connected facilities. The VOG system consists of a mist eliminator, a superheater, and one of two parallel HEPA filters.

The flow in the NWCF process off-gas system (POG) is comprised of off-gas from the NWCF. The NWCF was built to reduce high level liquid waste (HLLW) to a smaller volume and more stable solid form known as calcine. The NWCF calciner has undergone RCRA Partial Closure, but the NWCF POG and VOG are still connected to the system.

Flows from the NWCF POG and VOG are routed through banks of HEPA filters. One or two of the HEPA filter banks are normally on-line during operation. Each filter bank is made up of three stages, each with two HEPA filters. Each filter bank provides the removal efficiency equivalent to two stages of HEPA filtration at 99.97% each, during test conditions.

The calcined waste produced at the NWCF was transported by a pneumatic system to the Calcined Solids Storage Bins. Each bin set consists of stainless steel bins inside a concrete vault. The vessel off-gas and pressure relief lines for Calcined Solids Storage Bin Sets 1 through 3 are connected to the PAPS. A small air purge is introduced on the outlet from Bin Set 1 to prevent buildup of moisture in the line running to the PAPS. The only flow from the bins is due to passive "breathing" of the bins. Bin sets 4-7 are physically isolated from the PAPS.

The permit condition has been updated to reflect the current process description.

Removed Permit Condition 3.2

Emissions Control Description

Pollution Control Equipment Listing

- 3.2.1 *LET&D Mist eliminators (2 parallel trains)*
- 3.2.2 *LET&D HEPA filtration (2 banks)*
- 3.2.3 *VAPS Glass fiber bed filtration*
- 3.2.4 *VAPS HEPA filtration (26 banks)*
- 3.2.5 *PAPS Mist eliminator*
- 3.2.6 *PAPS HEPA filtration (1 stage of 3 filters)*
- 3.2.7 *DOG Mist eliminator*
- 3.2.8 *DOG Non-HEPA filtration*
- 3.2.9 *VOG Mist eliminator*
- 3.2.10 *VOG HEPA filtration (1 filter)*
- 3.2.11 *NWCF High efficiency cyclone*
- 3.2.12 *NWCF Wet scrubber system*
- 3.2.13 *NWCF HEPA filtration (4 banks)*
- 3.2.14 *Bin Sets 4, 5, 6, and 7 Non-HEPA Filtration (1 or 2 filters)*

This permit condition was removed because it was considered redundant to the information listed in permit conditions 13.

Existing Permit Condition 3.3

Main Stack Specification

The Main Stack (CPP-708) has the following specifications:

- Stack Height - 250.0 feet*
- Stack Diameter - 6.5 feet*
- Flow Rate - 119,000 acfm (actual cubic feet per minute)*

Table 3.1 LET&D, VENTILATION AIR SYSTEM, AND PROCESS OFF-GAS SYSTEM DESCRIPTION

<i>Emissions Unit(s) / Process(es)</i>	<i>Emissions Control Device</i>	<i>Emissions Point</i>
<i>LET&D</i>	<i>Two LET&D mist eliminators and two banks of LET&D HEPA filters</i>	<i>Main stack CPP-708 Height – 250 ft Diameter – 6.5 ft Flow rate – 119,000 acfm</i>
<i>Ventilation air system</i>	<i>VAPS fiberglass bed prefilter and 26 banks of four VAPS HEPA filters</i>	<i>Same as above</i>
<i>Process off-gas system</i>	<i>PAPS mist eliminator, a single stage of three PAPS HEPA filters, DOG mist eliminator, DOG non-HEPA filtration, VOG mist eliminator, VOG HEPA filter,</i>	<i>Same as above</i>

	<i>NWCF high efficiency cyclone, NWCF wet scrubber system, NWCF HEPA filter (4 banks), bin sets 4, 5, 6, and 7 non-HEPA filters (1 or 2 filters)</i>	
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Revised Permit Condition 14

Emission Controls Description

Table 2 LET&D, VENTILATION AIR SYSTEM, AND OFF-GAS SYSTEM DESCRIPTION

<i>Emissions Units / Processes</i>	<i>Emission Control Devices</i>	<i>Emission Points</i>
<i>LET&D</i>	<i>Two LET&D mist eliminators and two banks of LET&D HEPA filters</i>	<i>Main Stack CPP-708</i>
<i>Ventilation Air System</i>	<i>VAPS fiberglass bed prefilter and 26 banks of four VAPS HEPA filters</i>	<i>Main Stack CPP-708</i>
<i>Off-Gas System</i>	<i>PAPS mist eliminator, a single stage of three of five PAPS HEPA filters, one of two VOG mist eliminator, VOG HEPA filter, NWCF HEPA filter (one or two of three banks)</i>	<i>Main Stack CPP-708</i>

The table has been updated to correctly reflect the emission control devices.

Removed Permit Condition 3.4

Nitrogen Oxide (NO_x) Emission Limits

NO_x emissions shall not exceed 472 lb/hr, as determined by the in-stack continuous emission-monitoring system (CEMS), by approved U.S. EPA Reference Methods or approved alternative. Because the NWCF is the only substantial contributor of NO_x emissions to the main stack, continuous emission monitoring for NO_x is required only when the NWCF is operating. Annual NO_x emissions shall not exceed 1700 T/yr, as determined by summing the actual hourly emissions as shown by the CEMS and the results of any other emissions estimation methods that were used.

The NWCF has undergone RCRA partial closure. Therefore, the CEMS and NO_x emission limit is no longer necessary.

Existing Permit Condition 3.5

Radionuclide Emissions Limits

Emissions of radionuclides from the main stack shall not, by themselves, or in combination with emissions from other INEEL sources, exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent in excess of 10 millirem per year, in accordance with 40 CFR 61, Subpart H. Doses due to radon-220 and radon-222, and their respective decay products, are excluded from this limit.

Table 3.2 LET&D, VENTILATION AIR SYSTEM, AND PROCESS OFF-GAS SYSTEM EMISSIONS LIMITS

Source Description	NO_x		Radionuclides
	lb/hr	T/yr	millirem/yr
<i>Main stack CPP-708</i>	<i>472</i>	<i>1700</i>	<i>10</i>
<i>Combined INEEL sources</i>			<i>10</i>

Revised Permit Condition 15

40 CFR 61 Subpart H NESHAP Radionuclide Dose Impact Limit

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 millirem per year (mrem/yr) in accordance with 40 CFR 61.92.

The Subpart H NESHAP permit conditions were revised in the PTC to maintain consistency with other PTCs recently issued for the INL and for consistency with the INL facility-wide Tier I operating permit.

New Permit Condition 16

Opacity Limit

Emissions from any stack, vent, or functionally equivalent opening associated with the LET&D, ventilation air system, and process off-gas system, shall not exceed 20% opacity for a period or periods aggregating more than three minutes in any 60-minute period as required by IDAPA 58.01.01.625. Opacity shall be determined by the procedures contained in IDAPA 58.01.01.625.

The 20 percent opacity standard applies to all point sources of emissions.

Existing Permit Conditions 3.6 and 3.7

Radionuclide Requirements

The permittee shall maintain and operate instrumentation in accordance with 40 CFR 61, Subpart H, to verify proper operation of the air pollution control equipment installed and ensure the limits in Section 3.5 are met.

HEPA Filter Requirements

The permittee shall install, operate, and maintain HEPA filter stages for the VAPS, PAPS, and NWCF having a minimum particle removal efficiency of no less than 99.97%. The permittee shall maintain and operate instrumentation to measure the pressure drop across the filter stages. HEPA filter efficiency shall be tested after installation and on an annual basis according to the ANSI N510 testing standard. All HEPA filters must be pretested and certified prior to installation and meet the government performance specification and overpressure and rough-handling requirements per MIL-F-51068. The permittee shall maintain written procedures in place which specify the conditions which require change out of the filters.

Revised Permit Condition 17

HEPA Filter Requirements

17.1 Each HEPA filter shall have a minimum particle removal efficiency of no less than 99.97%.

17.2 The permittee shall maintain and operate instrumentation to measure the pressure drop across the filter(s). HEPA filter efficiency shall be tested according to the ASME N510 and/or N511 testing standard(s). Records of any testing performed shall be maintained in accordance with the General Provisions of this permit.

17.3 The permittee shall maintain written documentation to ensure compliance with this permit. This shall include, at a minimum, written procedures that specify how the pressure drop across the filter will be measured, the frequency of pressure drop monitoring, and the conditions that require change-out of the filters.

The Subpart H NESHAP permit conditions were revised in the PTC to maintain consistency with other PTCs recently issued for the INL and for consistency with the INL facility-wide Tier I operating permit.

Removed Permit Condition 3.8

CEMS Monitoring

The permittee shall maintain and operate an in-stack CEMS (continuous emissions monitor system) for the measurement of nitrogen oxides and gas flow rate at the main stack. The CEMS is required to be operated only while the NWCF is operating. The CEMS shall meet the requirements specified in 40 CFR 60, Appendix B. The permittee will maintain documentation that describes quality assurance procedures and maintenance procedures.

The NWCF has undergone RCRA partial closure. Therefore, the CEMS is no longer necessary.

Existing Permit Condition 3.9

Radionuclide Monitoring

The permittee shall perform radionuclide sampling and dose calculations in accordance with 40 CFR 61, Subpart H. Effective dose equivalents to members of the public shall be calculated using EPA-approved sampling procedures and EPA model CAP-88PC or other EPA-approved models.

Revised Permit Condition 18

40 CFR 61 Subpart H NESHAP Radionuclide Monitoring

In accordance with 40 CFR 61.93, the permittee shall determine radionuclide emissions and calculate effective dose equivalent values to members of the public using EPA-approved methods.

The Subpart H NESHAP permit conditions were revised in the PTC to maintain consistency with other PTCs recently issued for the INL and for consistency with the INL facility-wide Tier I operating permit.

Existing Permit Condition 3.10

HEPA Filter Monitoring

The permittee shall monitor the pressure drop across the HEPA filter stages.

Revised Permit Condition 19

HEPA Filter Pressure Drop Monitoring

When in operation, the permittee shall monitor and record the pressure drop across the HEPA filter stages of the HEPA filter systems at least once per day according to written procedures.

The Subpart H NESHAP permit conditions were revised in the PTC to maintain consistency with other PTCs recently issued for the INL and for consistency with the INL facility-wide Tier I operating permit.

Removed Permit Condition 3.11

Scrubber Monitoring

The permittee shall monitor the water flow rate and the pressure drop across all scrubbers.

This permit condition has been removed because the NWCF wet scrubber has been removed.

Existing Permit Condition 3.12

Annual Report

The permittee shall submit an annual report by July 1 that provides the results of dose calculations based on collected INEEL emissions during the preceding calendar year (January 1 to December 31).

Revised Permit Condition 20

40 CFR 61 Subpart H NESHAP Annual Report

The permittee shall submit annual reports and maintain records documenting radionuclide emissions and effective dose equivalent values in accordance with 40 CFR 61.94 and 40 CFR 61.95.

The Subpart H NESHAP permit conditions were revised in the PTC to maintain consistency with other PTCs recently issued for the INL and for consistency with the INL facility-wide Tier I operating permit.

Removed Permit Conditions 4, 5, and 6

INEEL-wide NO_x Sources

4.1 Process Description

A PTC was originally issued on 5/20/88 and addressed the increased throughput capacity and air emissions associated with the Fuel Processing Restoration (FPR) project. This project was cancelled and the permit was modified to remove the sections that were no longer applicable. The modified permit was issued on October 18, 1999. The current modification removes INTEC B-601, INTEC B-602, INTEC B-604, INTEC B-605, AND CFA 668 B-31, which have been removed from service and will no longer be operated. In addition, the requirement to operate and maintain an ambient monitoring network for the measurement of NO_x has been removed.

The facilities listed under this source heading with their corresponding NO_x short-term and long-term emission limits are located throughout the INEEL. The top portion of the INEEL site (approximately divided at the 43 degree, 45-minute latitude) was separated from this project mainly for modeling purposes. Although the Test Area North facility was included in the inventory of existing sources submitted in the original application, it was later excluded from modeling and will not be listed in this permit.

4.2 Facility and Acronym Listing

Argonne National Laboratory	ANL
Central Facilities Area	CFA
Naval Reactor Facility	NRF
Power Burst Facility Area	PBF
Waste Management Operations	WMO

4.3 Emissions Control Description

The INEEL-wide NO_x sources are uncontrolled.

4.4 Emission Limits

NO_x emissions from all INEEL-wide NO_x sources shall not exceed their corresponding pound-per-hour (lb/hr) or tons-per-year (T/yr) emission limits listed in Table 4.1.

Table 4.1 INEEL-WIDE NO_x SOURCES EMISSIONS LIMITS

Source Description	NO _x	
	lb/hr	T/yr
ANL Boiler No. 1 (Keeler boiler)	3.36	14.72
ANL Boiler No. 2 (Keeler boiler)	3.36	14.72
ANL Boiler No. 3 (Keeler boiler)	3.36	14.72
ANL Boiler No. 4 (Clever Brooks boiler)	3.74	14.72
CFA-650 B-25 (Clever Brooks boiler)	0.58	1.90
CFA-662 B-28 and B-35 (one stack)	0.96	3.14
CFA-671 B-33 and B-34 (one stack)	1.52	4.98
CFA-688 B-101 and B-102 (one stack)	2.32	7.21
NRF Boiler No. 1 (Vogt boiler)	22.66	37.13
NRF Boiler No. 2 (Vogt boiler)	22.66	37.13

<i>NRF Boiler No. 3 (Vogt boiler)</i>	<i>22.66</i>	<i>37.13</i>
<i>PBF-620 M-31 (Cyclotherm boiler)</i>	<i>0.24</i>	<i>0.79</i>

SUMMARY OF EMISSIONS LIMITS

Table 5.1 provides a summary of all emissions limits required by this permit:

Table 5.1 SUMMARY OF EMISSIONS LIMITS^a

Source Description	NO_x		Radionuclides
	lb/hr	T/yr^b	millirem/yr
<i>Combined INEEL sources</i>			<i>10</i>
<i>FAST stack</i>			<i>10</i>
<i>Main stack CPP-708 (LET&D, ventilation air system, and process off-gas system)</i>	<i>472</i>	<i>1700</i>	<i>10</i>
<i>ANL Boiler No. 1 (Keeler boiler)</i>	<i>3.36</i>	<i>14.72</i>	
<i>ANL Boiler No. 2 (Keeler boiler)</i>	<i>3.36</i>	<i>14.72</i>	
<i>ANL Boiler No. 3 (Keeler boiler)</i>	<i>3.36</i>	<i>14.72</i>	
<i>ANL Boiler No. 4 (Cleaver Brooks boiler)</i>	<i>3.74</i>	<i>14.72</i>	
<i>CFA-650 B-25 (Cleaver Brooks boiler)</i>	<i>0.58</i>	<i>1.90</i>	
<i>CFA-662 B-28 and B-35 (one stack)</i>	<i>0.96</i>	<i>3.14</i>	
<i>CFA-671 B-33 and B-34 (one stack)</i>	<i>1.52</i>	<i>4.98</i>	
<i>CFA-688 B-101 and B-102 (one stack)</i>	<i>2.32</i>	<i>7.21</i>	
<i>NRF Boiler No. 1 (Vogt boiler)</i>	<i>22.66</i>	<i>37.13</i>	
<i>NRF Boiler No. 2 (Vogt boiler)</i>	<i>22.66</i>	<i>37.13</i>	
<i>NRF Boiler No. 3 (Vogt boiler)</i>	<i>22.66</i>	<i>37.13</i>	
<i>PBF-620 M-31 (Cyclotherm boiler)</i>	<i>0.24</i>	<i>0.79</i>	

^a As determined by a pollutant-specific EPA reference method, DEQ-approved alternative, or as determined by DEQ's emissions estimation methods used in this permit analysis.

^b As determined by multiplying the actual or allowable (if actual is not available) pound-per-hour emissions rate by the allowable hours per year that the process(es) may operate(s), or by actual annual production rates. The permittee shall not exceed the T/yr listed based on any consecutive 12-month period.

EMISSIONS INVENTORY

The following table is a summary of the emissions increases and decreases associated with this permit modification. The emissions inventory table is provided for informational purposes only.

Table 6.1 EMISSIONS INVENTORY

Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Decrease (T/yr)	Change in Annual Emissions (T/yr)
<i>NO_x</i>		193.47	(193.47)
<i>SO₂</i>		687	(687)
<i>CO</i>		48.4	(48.4)
<i>PM/PM₁₀</i>		31.9	(31.9)
<i>VOC</i>		2.4	(2.4)
<i>TAPS/ HAPS</i>		0.05	(0.05)
Total:		963	(963)

^a TAPS/HAPS = toxic air pollutants / hazardous air pollutants

The INL-wide NO_x sources identified in existing Permit Condition 4.4 have either been removed from service or have been identified by the applicant as qualifying for exemptions as explained below.

ANL Boilers No. 1-4 (Keeler boilers and Cleaver Brooks boiler), CFA-650 B-25 (Cleaver Brooks boiler), CFA-662 B-28 and B-35, CFA-688 B-101 and B-102, and PBF-620 M-31 (Cyclotherm boiler) have been removed from service and will no longer be operated. These sources have been removed from the PTC.

CFA-671 B-33 and B-34 (Cleaver Brooks boilers) were installed in 1979 and 1980 and are used for space heating. The two boilers are below regulatory concern and qualify for a Category I exemption in accordance with IDAPA 58.01.01.01.221 and 223. Please see Appendix A for Form EXPT and supporting documentation.

NRF Boilers No. 1-3 (Vogt boilers) were installed in 1961. These sources were installed prior to the promulgation of the Clean Air Act amendments of 1977. They are exempt in accordance with 40 CFR 52.21(i) and have been removed from the PTC.

Permit Condition 5 has been removed from the PTC because it is redundant and the only emission limit that remains is the radionuclides emission limit with the removal of the NO_x emission limits.

The most current PTC General Provisions are included in this revised permit. Information regarding those conditions is shown below:

Permit Condition 21

The duty to comply general compliance provision requires that the permittee comply with all of the permit terms and conditions pursuant to Idaho Code §39-101.

Permit Condition 22

The maintenance and operation general compliance provision requires that the permittee maintain and operate all treatment and control facilities at the facility in accordance with IDAPA 58.01.01.211.

Permit Condition 23

The obligation to comply general compliance provision specifies that no permit condition is intended to relieve or exempt the permittee from compliance with applicable state and federal requirements, in accordance with IDAPA 58.01.01.212.01.

Permit Condition 24

The inspection and entry provision requires that the permittee allow DEQ inspection and entry pursuant to Idaho Code §39-108.

Permit Condition 25

The construction and operation notification provision requires that the permittee notify DEQ of the dates of construction and operation, in accordance with IDAPA 58.01.01.211.

Permit Condition 26

The performance testing notification of intent provision requires that the permittee notify DEQ at least 15 days prior to any performance test to provide DEQ the option to have an observer present, in accordance with IDAPA 58.01.01.157.03.

Permit Condition 27

The performance test protocol provision requires that any performance testing be conducted in accordance with the procedures of IDAPA 58.01.01.157, and encourages the permittee to submit a protocol to DEQ for approval prior to testing.

Permit Condition 28

The performance test report provision requires that the permittee report any performance test results to DEQ within 30 days of completion, in accordance with IDAPA 58.01.01.157.04-05.

Permit Condition 29

The monitoring and recordkeeping provision requires that the permittee maintain sufficient records to ensure compliance with permit conditions, in accordance with IDAPA 58.01.01.211.

Permit Condition 30

The excess emissions provision requires that the permittee follow the procedures required for excess emissions events, in accordance with IDAPA 58.01.01.130.

Permit Condition 31

The certification provision requires that a responsible official certify all documents submitted to DEQ, in accordance with IDAPA 58.01.01.123.

Permit Condition 32

The false statement provision requires that no person make false statements, representations, or certifications, in accordance with IDAPA 58.01.01.125.

Permit Condition 33

The tampering provision requires that no person render inaccurate any required monitoring device or method, in accordance with IDAPA 58.01.01.126.

Permit Condition 34

The transferability provision specifies that this permit to construct is transferable, in accordance with the procedures of IDAPA 58.01.01.209.06.

Permit Condition 35

The severability provision specifies that permit conditions are severable, in accordance with IDAPA 58.01.01.211.

PUBLIC REVIEW

Public Comment Opportunity

Because this permitting action does not authorize an increase in emissions, an opportunity for public comment period was not required or provided in accordance with IDAPA 58.01.01.209.04 or IDAPA 58.01.01.404.04.

APPENDIX A – FORM EXPT AND SUPPORTING DOCUMENTATION

Exemption **Form EXPT**



DEQ AIR QUALITY PROGRAM
 1410 N. Hilton, Boise, ID 83706
 For assistance, call the
 Air Permit Hotline – 1-877-5PERMIT

Revision 1
 04/23/2011

This form is for facilities desiring an exemption from the requirement to obtain a permit to construct for certain sources. The Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01.220 through 223) allow for owners or operators to exempt certain sources from the requirement to obtain a permit to construct. This form is a tool to assist facilities in preparing and maintaining their exemption documentation in support of a PTC exemption.

A PTC exemption does not release the emissions unit from compliance with all other applicable federal (e.g., NSPS, Tier I operating permit), state, or local laws, regulations, permits, or ordinances.

This form is for one project, which may include several emission units. The emission unit(s) cannot be exempted separately.

For each box in the form below, CTRL+click¹ on the blue underlined text for instructions and information.

IDENTIFICATION			
1. Company Name:	U.S. Department of Energy	2. <u>Facility Name:</u>	Idaho National Laboratory
3. <u>Facility ID No.:</u>	023-00001		
4. <u>Brief Project Description:</u>	Permit to Construction exemption for two Cleaver Brooks commercial fire tube low-pressure steam-producing boilers (CFA-671-007 and 008) that were installed in 1979 and 1980, respectively and are used for space heating.		
GENERAL INFORMATION			
5. <u>Facility Information</u>	Name of facility contact person: Sharon Dossett	Telephone and email for facility contact person: (208)526-9125	
	Facility location: Scoville, Idaho, approximately 50 miles west of Idaho Falls, and about 1 mile north of Hwy 20/26. Location legal description: SW quarter, Section 1 T2N, R93, BM		
6. <u>Complete Project Description</u>	Provide a complete description and specification of equipment and activity being exempted in a <u>separate sheet(s)</u> . See attached sheet		
GENERAL EXEMPTION CRITERIA			
7. <u>Dates</u>	Date of exemption determination: 07/24/2011	Date of construction commencement (estimated/actual): 1979 and 1980	
8. For each <u>regulated air pollutant</u> , are the <u>uncontrolled emissions</u> of the <u>project/source</u> greater than or equal to 100 tons per year? Please attach <u>supporting documentation</u> .	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No See Table 1 If yes, the project/source cannot be exempted.		
9. Is the facility a <u>major facility/major stationary source</u> ? Please attach <u>supporting documentation</u> .	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, continue with question #10. If no, skip question #10 and go to question #11.		
10. For each regulated air pollutant, is the <u>emissions increase</u> of the project/source greater than or equal to the <u>significant emissions rate</u> ? Please attach <u>supporting documentation</u> .	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No See Table 2 If yes, the project/source cannot be exempted.		
11. Is the source part of a proposed <u>new major facility/major stationary source</u> or part of a proposed <u>major modification</u> ?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, the project/source cannot be exempted.		

¹ Place your cursor over the blue underlined number or text, then click while holding down the Ctrl key.

CATEGORY II EXEMPTION	
12. Does project/source qualify for exemption in accordance with IDAPA 58.01.01.222 (not including IDAPA 58.01.01.222.01.a and e) ?	<input type="checkbox"/> Yes. Cite the applicable rules: Then go to question #22. <input checked="" type="checkbox"/> No
13. Does the project/source qualify for exemption in accordance with IDAPA 58.01.01.222.01.a ?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No. If no, go to question #14.
13a. This question only applies to Department of Energy (DOE) facilities: are the emissions of radionuclides less than 1% of the applicable standard? Please attach supporting documentation .	<input type="checkbox"/> Yes. If yes, go to question #17. <input type="checkbox"/> No. If no, the project/source cannot be exempted. <input type="checkbox"/> N/A. If N/A, go to question #17.
14. Does the project/source qualify for exemption in accordance with IDAPA 58.01.01.222.01.e ?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No. If no, go to question #15
14a. Are the emissions of radionuclides less than 1% of the applicable standard? Please attach supporting documentation .	<input type="checkbox"/> Yes <input type="checkbox"/> No. If no, the project/source cannot be exempted. <input type="checkbox"/> N/A
14b. Will the exemption for a pilot plant terminate one year after the commencement of operations and not be renewed?	<input type="checkbox"/> Yes. If yes, go to question #17. <input type="checkbox"/> No. If no, go to question #15. <input type="checkbox"/> N/A. If N/A, go to question #17.
CATEGORY I EXEMPTION	
15. Are the controlled emissions below regulatory concern ? Please attach supporting documentation .	<input checked="" type="checkbox"/> Yes See Table 2 <input type="checkbox"/> No. If no, the project/source cannot be exempted.
16. Are the emissions of radionuclides less than 1% of the applicable standard? Please attach supporting documentation .	<input type="checkbox"/> Yes <input type="checkbox"/> No. If no, the project/source cannot be exempted. <input checked="" type="checkbox"/> N/A
TAP EXEMPTION	
17. Does the source emit a toxic air pollutant(s) (TAP)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No. If no, go to question #22.
18. Is the increase in the uncontrolled emissions rate of TAP of the project/source below regulatory concern of TAP ? Please attach supporting documentation .	<input type="checkbox"/> Yes, If yes, go to question #22. See Table 3 <input checked="" type="checkbox"/> No
19. Is the increase in the uncontrolled emissions rate of TAP of the project/source less than or equal to all emissions levels ? Please attach supporting documentation .	<input type="checkbox"/> Yes, if yes, go to question #21. <input checked="" type="checkbox"/> No
20. Is the uncontrolled ambient concentration of TAP of the project/source less than or equal to all applicable acceptable ambient concentrations (AACs)? Please attach supporting documentation .	<input checked="" type="checkbox"/> Yes. If yes, go to question #21. <input type="checkbox"/> No. If no, the project/source cannot be exempted.
21. Has a Toxic Air Pollutant Exemption Report been submitted?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
RECORD RETENTION	
22. Are the records that identify and verify the exemption maintained on-site?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, the project can be exempted.

CERTIFICATION		
<p>In accordance with IDAPA 58.01.01.123 (Rules for the Control of Air Pollution in Idaho), I certify based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.</p>		
23. Responsible Official's Name and Title	Sharon D. Dossett	
24. Responsible Official's Signature	<i>Sharon Dossett</i>	Date: 8/25/2011



DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline - 1-877-6PERMIT

Supporting Documentation for Exemption **Form EXPT**

Revision 0
09/08/08

Project Description to Accompany Form EXPT

IDENTIFICATION					
1. Company Name:	U.S. Department of Energy	2. Facility Name:	Idaho National Laboratory	3. Facility ID No.:	023-00001
4. Brief Project Description: Permit to Construction exemption for two Cleaver Brooks commercial fire tube low-pressure steam-producing boilers (CFA-671-007 and 008) that were installed in 1979 and 1980, respectively and are used for space heating.					

Item 5. Complete Project Description:

In the space below, provide a complete description and specification of equipment and activity being exempted:

This is to document that two boilers in CFA-671 are exempt from permit to construct requirements. They are commercial fire tube low-pressure steam-producing boilers. They were installed in 1979 and 1980, respectively. The two boilers are associated with two stacks identified as CFA-671-007 and CFA-671-008. The boilers burn propane or No. 2 diesel fuel with a combined maximum design fuel throughput of 76 gal/hr. The burned diesel fuel contains less than 500 ppm sulfur. The maximum operating schedule is less than 5000 hrs/yr.

Table 1: CFA-671 Uncontrolled Emissions

Pollutant	Maximum Fuel Rate (gal/hr)	AP-42 Emission Factor ^a	Emission Factor Units	Maximum Operating Schedule (hrs/yr)	Potential to Emit (lbs/hr)	Potential to Emit (T/yr) ³	PTE Significance Level (T/yr)	10% PTE Significance Level (T/yr)
SO ₂ ¹	76	71	lbs/10 ³ gal	8760	5.40	23.63	40	4
NO _x ¹	76	20	lbs/10 ³ gal	8760	1.52	6.66	40	4
CO ¹	76	5	lbs/10 ³ gal	8760	0.38	1.66	100	10
PM ¹	76	2	lbs/10 ³ gal	8760	0.15	0.67	25	2.5
VOC's ¹	76	0.34	lbs/10 ³ gal	8760	0.03	0.11	40	4
Beryllium ²	76	3	lbs/10 ¹² BTU	8760	3.2E-05	1.4E-04	0.0004	0.00004
Lead ²	76	8.9	lbs/10 ¹² BTU	8760	9.5E-05	4.1E-04	0.6	0.06
Mercury ²	76	3	lbs/10 ¹² BTU	8760	3.2E-05	1.4E-04	0.1	0.01

Calculations:

- 1) PTE (lbs/hr) = Maximum Fuel Rate (gal/hr) x AP-42 EF (lbs/10³ gal)
- 2) PTE (lbs/hr) = Maximum Fuel Rate (gal/hr) x AP-42 EF (lbs/1E¹² BTU) x (140,000 BTU/gal)^b
- 3) PTE (tons/yr) = Potential to Emit (lbs/hr) x Maximum Operating Schedule (8760 hrs/yr) x (1 ton/2000 lbs)

Table 2: CFA-671 Projected Emissions

Pollutant	AP-42 Emission Factor ^a	Emission Factor Units	Maximum Gallons/yr Burned ^b	Potential to Emit (lbs/hr)	Potential to Emit ^c (T/yr)	PTE Significance Level (T/yr)	10% PTE Significance Level (T/yr)
SO ₂ ^{1,4}	7.1	lbs/10 ³ gal	380000	0.31	1.35	40	4
NO _x ¹	20	lbs/10 ³ gal	380000	0.87	3.80	40	4
CO ¹	5	lbs/10 ³ gal	380000	0.22	0.95	100	10
PM ¹	2	lbs/10 ³ gal	380000	0.09	0.38	25	2.5
VOC's ¹	0.34	lbs/10 ³ gal	380000	0.01	0.06	40	4
Beryllium ²	3	lbs/10 ¹² BTU	380000	1.82E-05	7.98E-05	0.0004	0.00004
Lead ²	9	lbs/10 ¹² BTU	380000	5.47E-05	2.39E-04	0.6	0.06
Mercury ²	3	lbs/10 ¹² BTU	380000	1.82E-05	7.98E-05	0.1	0.01

Calculations:

- 1) PTE (lbs/hr) = Maximum gallons x AP-42 EF (lbs/10³ gal) x 8760 hrs
- 2) PTE (lbs/hr) = Maximum gallons x AP-42 EF (lbs/1E¹² BTU) x (140,000 BTU/gal)/8760 hrs^b
- 3) PTE (tons/yr) = Potential to Emit (lbs/hr) x 8760 hrs/yr x (1 ton/2000 lbs)
- 4) 500 ppm fuel sulfur limit
- 5) See Item 5 on DEQ Supporting Documentation for Exemption, Form EXPT.

Table 3. CFA-671 Toxic Ambient Air Impact

Pollutant	Maximum Fuel Rate (gal/hr)	AP-42 Emission Factor ^a (lbs/1E ¹² BTU)	Potential to Emit ¹ (lbs/hr)	EL (lbs/hr)	Maximum Unit Release Factor ^c (mg/m ³ per lb/hr)	Source Contribution ² (mg/m ³)	IDAPA Acceptable Ambient Concentration (mg/m ³)
Arsenic	76	4	4.26E-05	1.50E-06	0.012	5.11E-07	2.30E-04
Beryllium	76	3	3.19E-05	2.80E-05	0.012	3.83E-07	4.20E-03
Cadmium	76	3	3.19E-05	3.70E-06	0.012	3.83E-07	5.60E-04
Chromium	76	3	3.19E-05	5.60E-07	0.012	3.83E-07	2.50E+01
Copper	76	6	6.38E-05	1.30E-02	3.78	2.41E-04	10
Manganese	76	6	6.38E-05	6.70E-02	3.78	2.41E-04	50
Nickel	76	3	3.19E-05	2.70E-05	0.012	3.83E-07	4.20E-03
Selenium	76	15	1.60E-04	1.30E-02	3.78	6.03E-04	1.00E+01
Zinc	76	4	4.26E-05	3.33E-01	3.78	1.61E-04	5.00E+02

Calculations:

1) PTE (lbs/hr) = Maximum Fuel Rate (gal/hr) x AP-42 EF (lbs/1E¹² BTU) x (140000 BTU/gal)^b

2) Source Contribution (mg/m³) = PTE (lb/hr) x Maximum Unit Release Factor (mg/m³ per lb/hr)

Notes:

- a. AP-42 Emission Factors, Section 1.3 Fuel Oil Combustion, Tables 1.3. 1, 1.3.3, and 1.3.10
- b. 1 gallon fuel = 140000 BTU
- c. Idaho National Laboratory EDF-2892, "Unit Release Concentrations for Evaluating Ground-level Atmospheric Releases at the INEEL", M. J. Case October 2, 2001.

APPENDIX B – FACILITY DRAFT COMMENTS

The following comments were received from the facility on December 5, 2011:

Facility Comment: In the draft permit add CH2M-WG Idaho, LLC to the permittee listing.

DEQ Response: This change has been made.

Facility Comment: In the draft permit Table 1, change the emission control description per the red line changes.

DEQ Response: These changes have been made.

Facility Comment: In the draft permit Off-Gas Process and Control Description, update the description per the red line changes.

DEQ Response: These changes have been made.

Facility Comment: In the SOB, include NWCF in the acronyms list.

DEQ Response: This change has been made.

Facility Comment: In the SOB Table 1, change the control equipment description for the off-gas system per the red line changes.

DEQ Response: These changes have been made.

Facility Comment: In the SOB, change the PSD classification to PSD major.

DEQ Response: This change has been made.

APPENDIX C – PROCESSING FEE

PTC Fee Calculation

Instructions:

Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company: U.S. Department of Energy, INL
Address: 1955 Fremont Avenue
City: Idaho Falls
State: Idaho
Zip Code: 83415
Facility Contact: Teresa Perkins
Title: Director, Environment & Sustainability Division
AIRS No.: 023-00001

N Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N

N Did this permit require engineering analysis? Y/N

N Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.0	0	0.0
SO ₂	0.0	0	0.0
CO	0.0	0	0.0
PM10	0.0	0	0.0
VOC	0.0	0	0.0
TAPS/HAPS	0.0	0	0.0
Total:	0.0	0	0.0
Fee Due	\$ 250.00		

Comments:

This revision was for the removal of INL wide NO_x sources and the exemption of boilers. The revision did not require engineering analysis.

