



## Department of Energy

Idaho Operations Office  
1955 Fremont Avenue  
Idaho Falls, ID 83415

April 1, 2013

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APR 02 2013

DEPARTMENT OF ENVIRONMENTAL QUALITY  
STATE A/C PROGRAM

Mr. William Rogers, Permit Program Coordinator  
Air Quality Division  
Idaho Department of Environmental Quality  
1410 North Hilton  
Boise, Idaho 83706

SUBJECT: Idaho National Laboratory Permit to Construct Application for the Distillation of Sodium from Wastes at the Idaho Nuclear Technology and Engineering Center (OS-ETSD-13-053)

Dear Mr. Rogers:

CH2M-WG Idaho, LLC (CWI) and the Department of Energy, Idaho Operations Office (DOE-ID), are submitting a Permit to Construct (PTC) application for a project entitled the Distillation of Sodium from Wastes to be constructed at the Idaho National Laboratory (INL), Idaho Nuclear Technology and Engineering Center. In addition, we are requesting a 15-day pre-permit construction approval in accordance with the Idaho Administrative Procedures Act (IDAPA), Rules for the Control of Air Pollution in Idaho, 58.01.01.213.

The project addressed in this permit application is a subset of the INL ongoing project, Remote-Handled Transuranic (RH-TRU) Waste Repackaging. The specific RH-TRU waste lots 6 and 7 contain radioactive constituents, primarily uranium, plutonium, other TRU isotopes and shorter-lived isotopes (e.g. cesium and cobalt). The waste lots also contain the hazardous constituents sodium and sodium-potassium alloy, which are categorized as reactive and ignitable, making the waste difficult to handle and treat, hence the need for the sodium removal from the waste. Upon completion of the distillation, the sodium will be stored until it can be sent off-site for treatment and disposal and the remaining waste will be repackaged for final disposal.

Included with this letter are the PTC application, Responsible Official certification sheet, and the Pre-Permit Checklist. An application fee of \$1,000 is enclosed with this application as required by IDAPA 58.01.01.226.

“REQUEST FOR ADMINISTRATIVE PERMIT AMENDMENT”

Also, in accordance with IDAPA 58.01.01.381.02.a and 58.01.01.209.05.c.vi, CWI and DOE-ID would like to request that an administrative amendment be processed after issuance of the PTC to incorporate the PTC requirements into the INL Tier I Operating Permit.

Mr. William Rogers

2

April 1, 2013

If you have any questions related to this application, please contact me at (208) 526-5670.

Sincerely,



Tim J. Safford  
Environment and Sustainability Division

Enclosure

cc: K. Hanna, DEQ (2 copies PTC)  
R. Owen, DEQ (1 copy PTC)  
D. Hutchison, CWI, w/o enc.  
K. Miller, CWI, w/o enc.  
J. Tkachyk, CWI, w/o enc.

**REGULATORY CERTIFICATION**

**APPLICATION FOR AN AIR QUALITY PERMIT TO CONSTRUCT AND  
APPROVAL TO CONSTRUCT FOR DISTILLATION OF SODIUM FROM  
WASTES AT THE IDAHO NATIONAL LABORATORY SITE**

**February 2013**

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.



\_\_\_\_\_  
Kevin W. Daniels  
Vice President, ESH&QA (CWI)

2/21/2013

\_\_\_\_\_  
Date

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true accurate and complete.



\_\_\_\_\_  
Robert Boston  
Deputy Manager, Operation Support (DOE)

3/26/2013

\_\_\_\_\_  
Date



## 15- Day Pre-Permit Construction Approval Application Completeness Checklist

This checklist is designed to aid the applicant in submitting a complete pre-permit construction approval application. This checklist should be completed and submitted with the pre-permit construction approval application.

### I. Actions Needed Before Submitting Application

- Refer to the Rule. Read the Pre-Permit Construction requirements contained in IDAPA 58.01.01.213, Rules for the Control of Air Pollution in Idaho.
- Refer to DEQ's Pre-Permit Construction Approval Guidance Document. DEQ has developed a guidance document to aid applicants in submitting a complete pre-permit construction approval application. The guidance document is located on DEQ's website (go to [http://www.deq.idaho.gov/air/permits\\_forms/permitting/ptc\\_prepermit\\_guidance.pdf](http://www.deq.idaho.gov/air/permits_forms/permitting/ptc_prepermit_guidance.pdf))
- Consult with DEQ Representatives. Schedule a pre-application meeting with DEQ to discuss application requirements before submitting the pre-permit construction approval application. Schedule the meeting by contacting the DEQ Air Permit Hotline at **877-5PERMIT**. The meeting can be in person or on the phone. Refer to IDAPA 58.01.01.213.01b.
- Schedule Informational Meeting. Schedule an informational meeting before submitting the pre-permit construction approval application for the purposes of satisfying IDAPA 58.01.01.213.02.a. The purpose for the informational meeting is to provide information about the proposed project to the general public. Refer to IDAPA 58.01.01.213.01.c.
- Submit Ambient Air Quality Modeling Protocol. It is required that an ambient air quality modeling protocol be submitted to DEQ at least two (2) weeks before the pre-permit construction approval application is submitted. Contact DEQ's Air Quality Hotline at **877-5PERMIT** for information about the protocol.
- Written DEQ Approved Protocol. Written DEQ approval of the modeling protocol must be received before the pre-permit construction approval application is submitted. Refer to IDAPA 58.01.01.213.01.c.

### II. Application Content

Application content should be prepared using the checklist below. The checklist is based on the requirements contained in IDAPA 58.01.01.213 and DEQ's Pre-Permit Construction Approval Guidance Document.

- Pre-Permit Construction Eligibility and Proof of Eligibility. Pre-permit construction approval is not available for any new Prevention of Significant Deterioration (PSD) major source, any proposed PSD major modification, or any proposed major NSR project in a non-attainment area. Emissions netting and emissions offsets are not allowed to be used. A certified proof of pre-permit construction eligibility must be submitted with the pre-permit construction approval application. Refer to IDAPA 58.01.01.213.01.
- Request to Construct Before Obtaining a Permit to Construct. A letter requesting the ability to construct before obtaining the required permit to construct must be submitted with the pre-permit construction approval application. Refer to IDAPA 58.01.01.213.01.c.
- Apply for a Permit to Construct. Submit a Permit to Construct application using forms available on DEQ's website at <http://www.deq.idaho.gov>. Refer to IDAPA 58.01.01.213.01.a.



**Department of Environmental Quality**  
1410 N. Hilton, Boise, ID 83706  
For assistance, call the  
Air Permit Hotline - 1-877-5PERMIT

AQ-CH-P004

- Permit to Construct Application Fee.** The permit to construct application fee of \$1000 must be submitted at the time the original pre-permit construction approval application is submitted. Refer to IDAPA 58.01.01.224. If the pre-permit construction approval is denied and a new application is submitted, a new \$1,000 application fee will be required to be submitted. The application fee is not transferable or refundable. The application fee can be paid by check, credit card or Electronic Funds Transfer (EFT). If you choose to pay by credit card or EFT, please refer to the following Access Idaho link:  
<https://www.accessidaho.org/secure/deq/payport/item.html?id=511>  
If you choose to pay by check, enclose the check with your pre-permit construction approval application.
- Notice of Informational Meeting.** Within 10 days after the submittal of the pre-permit construction approval application, an informational meeting must be held in at least one location in the region where the stationary source will be located. The information meeting must be made known by notice published at least 10 days before the informational meeting in a newspaper of general circulation in the county in which the stationary source will be located. A copy of this notice, as published, must be submitted with the pre-permit construction approval application. Refer to IDAPA 58.01.01.213.02.a. Additional information regarding the informational meeting is included in DEQ's Pre-Permit Construction Approval Guidance Document. (go to [http://www.deq.idaho.gov/air/permits\\_forms/permitting/ptc\\_prepermit\\_guidance.pdf](http://www.deq.idaho.gov/air/permits_forms/permitting/ptc_prepermit_guidance.pdf))
- Process Description(s).** The process or processes for which pre-permit construction approval is requested must be described in sufficient detail and clarity such that a member of the general public not familiar with air quality can clearly understand the proposed project. A process flow diagram is required for each process for which pre-permit construction approval is requested. Refer to IDAPA 58.01.01.213.01.c.
- Equipment List.** All equipment that will be used for which pre-permit construction approval is requested must be described in detail. Such description includes, but is not limited to, manufacturer, model number or other descriptor, serial number, maximum process rate, proposed process rate, maximum heat input capacity, stack height, stack diameter, stack gas flowrate, stack gas temperature, etc. All equipment that will be used for which pre-permit construction approval is requested must be clearly labeled on the process flow diagram. Refer to IDAPA 58.01.01.213.01.c.
- Scaled Plot Plan.** It is required a scaled plot plan be included in the permit to construct application and it must clearly label the location of each proposed process and the equipment that will be used in the process.
- Proposed Emissions Limits and Modeled Ambient Concentration for All Regulated Air Pollutants.** All proposed emission limits and modeled ambient concentrations for all regulated air pollutants must demonstrate compliance with all applicable air quality rules and regulations. Regulated air pollutants include criteria air pollutants (PM<sub>10</sub>, SO<sub>x</sub>, NO<sub>2</sub>, O<sub>3</sub>, CO, lead), toxic air pollutants listed pursuant to IDAPA 58.01.01.585 and 586, and hazardous air pollutants listed pursuant to Section 112 of the 1990 Clean Air Act Amendments (go to <http://www.epa.gov/ttn/atw/188polls.html>). Describe in detail how the proposed emissions limits and modeled ambient concentrations demonstrate compliance with each applicable air quality rule and regulation. It is requested that emissions calculations, assumptions, and documentation be submitted with sufficient detail so DEQ can verify the validity of the emissions estimates. Refer to IDAPA 58.01.01.213.01.c.
- Restrictions on a Source's Potential to Emit.** Any proposed restriction on a source's potential to emit such that permitted emissions will be either below major source levels or below a significant increase must be described in detail in the pre-permit construction approval application. Refer to IDAPA 58.01.01.213.01.d.
- List all Applicable Air Quality Rules and Regulations.** All applicable rules and regulations must be cited by the rule or regulation section/subpart that applies for each emissions unit. Refer to IDAPA 58.01.01.213.01.c.
- Certification of Pre-Permit Construction Approval Application.** The pre-permit construction approval application must be signed by the Responsible Official and must contain a certification signed by the Responsible Official. The certification must state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. Refer to IDAPA 58.01.01.213.01.d and IDAPA 58.01.01.123.



**Department of Environmental Quality**  
1410 N. Hilton, Boise, ID 83706  
For assistance, call the  
Air Permit Hotline - 1-877-5PERMIT

AQ-CH-P004

- 
- Submit the Pre-Construction Approval Application. Submit the pre-permit construction approval application and application fee to the following address:

Department of Environmental Quality  
Air Quality Division  
Stationary Source Program  
1410 North Hilton  
Boise, ID 83706-1255

**Application for an Air Quality  
Permit to Construct and Approval  
to Construct for  
Distillation of Sodium from Wastes  
at the Idaho National Laboratory  
Site**

March 2013

**Application for an Air Quality Permit to Construct and  
Approval to Construct for  
Distillation of Sodium from Wastes at the Idaho National  
Laboratory Site**

**March 2013**

**Idaho Cleanup Project  
Idaho Falls, Idaho 83415**

**Prepared for the  
U.S. Department of Energy  
Assistant Secretary for Environmental Management  
Under DOE Idaho Operations Office  
Contract DE-AC07-05ID14516**

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## ACRONYMS

ANSI	American National Standards Institute
ATC	approval to construct
CFR	Code of Federal Regulations
CWI	CH2M-WG Idaho, LLC
DEQ	Idaho Department of Environmental Quality
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
EDE	effective dose equivalent
EDF	engineering design file
EPA	U.S. Environmental Protection Agency
FAST	Fluorinel Dissolution Process and Fuel Storage
FDP	Fluorinel Dissolution Process
HAP	hazardous air pollutant
HEPA	high-efficiency particulate air
IDAPA	Idaho Administrative Procedures Act
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
MEI	maximally exposed individual
NESHAP	National Emission Standards for Hazardous Air Pollutants
PCB	polychlorinated biphenyl
PM	particulate matter
PSD	prevention of significant deterioration
PTC	permit to construct
RH	remote-handled
RTV	room temperature vulcanizing
SDS	sodium-vapor-distillation system
TAP	toxic air pollutant
TRU	transuranic
U.S.	United States
VOC	volatile organic compound



# Application for an Air Quality Permit to Construct and Approval to Construct for Distillation of Sodium from Wastes at the Idaho National Laboratory Site

## 1. INTRODUCTION

CH2M-WG Idaho, LLC (CWI) and the U.S. Department of Energy Idaho Operations Office (DOE-ID) (the permittee) are requesting a 15-day pre-permit construction approval and air quality permit to construct (PTC) from the Idaho Department of Environmental Quality (DEQ) and approval to construct (ATC) from the United States (U.S.) Environmental Protection Agency (EPA), for distillation of sodium contained in remote-handled (RH) transuranic (TRU) waste Lots 6 and 7. This application contains the requirements for both the ATC and PTC, and will be submitted to both the EPA and DEQ.

The Idaho National Laboratory (INL) Site is eligible for a 15-day pre-permit construction approval (Idaho Administrative Procedures Act [IDAPA] 58.01.01.213) because the sodium distillation project:

- Is not a major new source or a major modification
- Is not utilizing offsets (emissions netting [IDAPA 58.01.01.213.01])
- Includes a comprehensive air quality assessment, as well as other preconstruction approval administrative requirements.

### 1.1 Background

The DOE-ID, Office of Environmental Management, currently owns radiological and mixed wastes generated during the 40+ years that the U.S. Department of Energy (DOE) conducted research on advanced nuclear reactor concepts, nuclear safety, and nuclear fuel development at the Materials and Fuels Complex, formerly Argonne National Laboratory-West, on the INL Site. The overall mission of the RH-TRU Waste Repackaging Project is for DOE to comply with the Idaho *Settlement Agreement* (Idaho 1995). Additionally, DOE is required to comply with the *INL Site Treatment Plan* (DOE-ID 2012). Compliance with the *Settlement Agreement* and *INL Site Treatment Plan* will result in stored TRU waste at the INL Site being shipped off-Site by a target date of December 31, 2015.

The project addressed in this permit application is a subset of the ongoing RH-TRU Waste Repackaging Project at the INL Site. The specific work of concern is the removal, by distillation, of sodium contained in RH-TRU waste Lots 6 and 7.

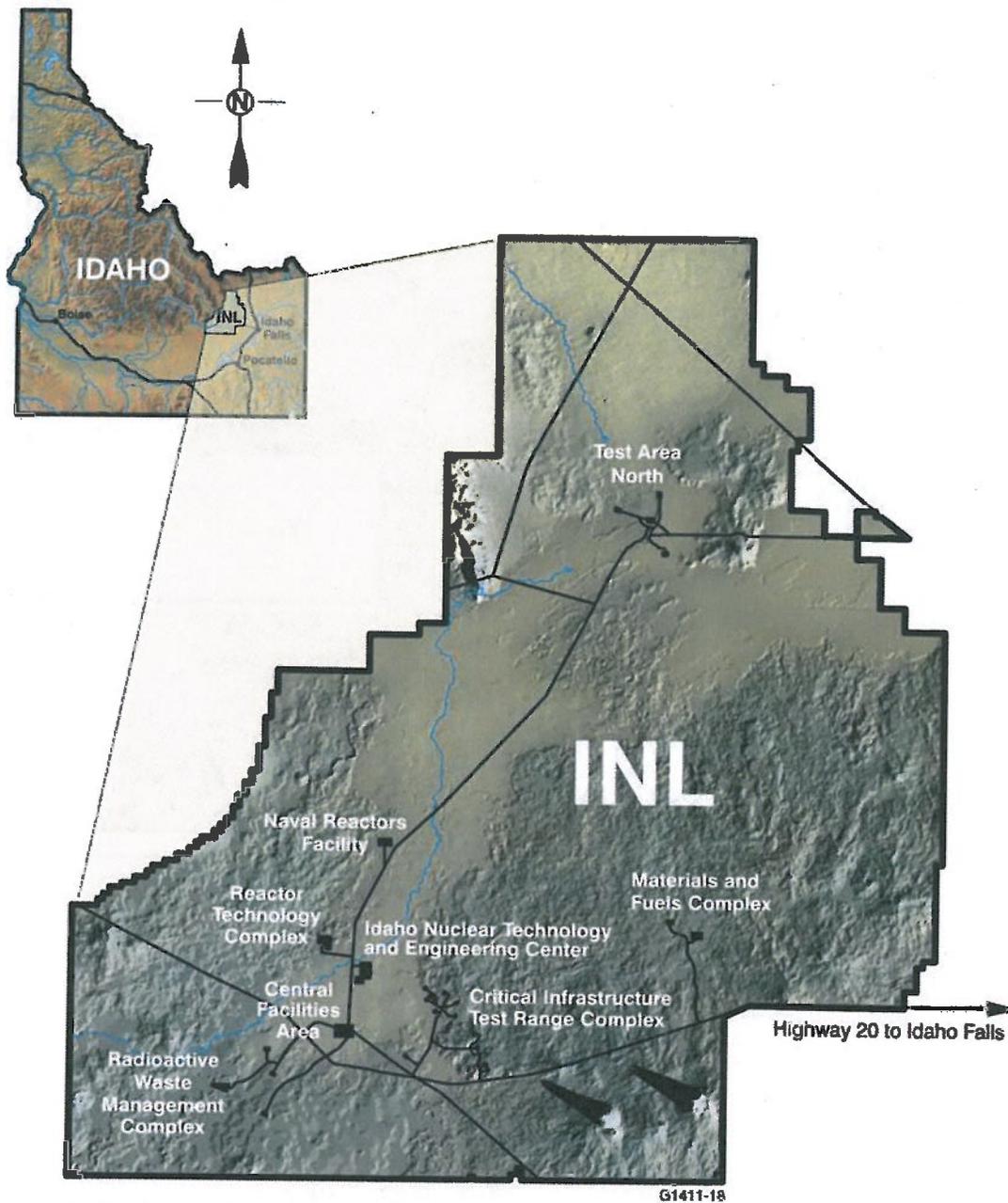
The radioactive waste constituents of RH-TRU Lots 6 and 7 wastes are primarily uranium, plutonium, other TRU isotopes, and shorter-lived isotopes (e.g., cesium and cobalt). The hazardous constituents in the waste are reactive metals (i.e., sodium and NaK), which are categorized as reactive and ignitable, making the waste difficult to handle and treat, hence, the need for sodium removal from the waste.

## **1.2 Project Location**

The proposed project is located on the INL Site, which is a restricted-access, government-owned facility that covers over 2,305 km<sup>2</sup> (890 mi<sup>2</sup>) in southeastern Idaho. The INL Site is on the Snake River Plain, having an average elevation of approximately 1,520 meters (5,000 feet) above sea level (see Figure 1). Sodium distillation will be conducted in Building CPP-666 at the Idaho Nuclear Technology and Engineering Center (INTEC) on the INL Site. Releases will be out of stack CPP-767 (see Figure 2).

## **1.3 Schedule**

Installation of the sodium distillation system (SDS) is scheduled to begin in May 2013, with startup of the system scheduled for late September 2013.



## Idaho National Laboratory Site

Figure 1. Idaho National Laboratory Site.

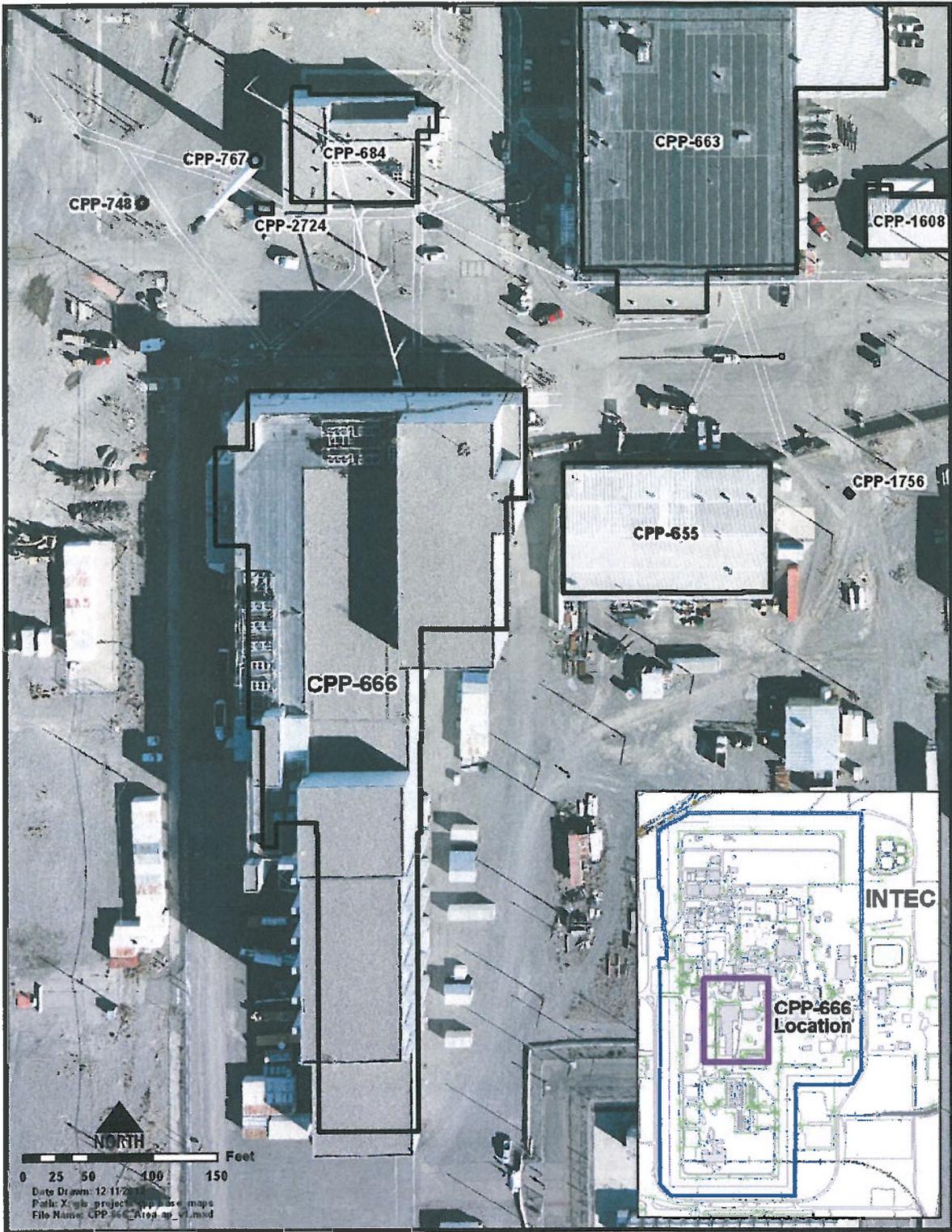


Figure 2. CPP-666 and Stack CPP-767-001 at the Idaho Nuclear Technology and Engineering Center on the INL Site.

## 2. SODIUM DISTILLATION PROCESS

### 2.1 Process Overview

Lots 6 and 7 waste container disassembly and sorting will be conducted in the Fluorinel Dissolution Process (FDP) cell at CPP-666 and will include opening containers, removing shield plugs, and removing filler material to expose the waste contents. The contents of each container will be sorted, characterized, and sized. Waste contaminated with reactive metals will require further treatment to remove the ignitable or reactive characteristics before it can be repackaged for final disposition.

As part of the pre-SDS waste sorting, if it is determined certain waste will not require treatment by the SDS, it will be handled as follows: Debris suspected of being contaminated with small amounts of reactive metals will be misted with water or immersed in a water bath and observed for bubbles of hydrogen gas. Sodium will be allowed to react until hydrogen bubbles are infrequent. Met-L-X or other inert media will be used to respond to a fire. Water will be managed as a secondary waste. Sieved fines will be mixed with Met-L-X. No regulated toxic or criteria pollutants emissions are anticipated from the sorting, characterization, or sizing processes. Waste containing inaccessible and/or larger quantities of sodium will be processed through the SDS.

The SDS (see Figure 3) will be installed in the SB-8 room at the 31-ft below-ground level of CPP-666. The SDS will be controlled remotely from outside the SB-8 room. The 20-inch delayed neutron interrogator tube extending from the FDP cell down into the SB-8 room will be used as a pass-through to lower remote-handled radioactive waste that is contaminated with elemental sodium down into the SDS for sodium removal. The top of the sodium distillation vessel will be within a contamination control enclosure to prevent the spread of contamination in the SB-8 room. Once the waste has been secured in the sodium distillation vessel, the lifting device used to lower the waste into the vessel from the FDP cell will be detached and removed from the vessel. Then, the top of the vessel will be sealed remotely using the electrically actuated knife gate on the top of the vessel, and the sodium within the vessel will be distilled from the vessel and collected in a collection vessel. Upon completion of the distillation cycle, the waste in the distillation vessel will be retrieved up through the delayed neutron interrogator tube to the FDP cell, where it can be repackaged for final disposition in accordance with contractual requirements.

### 2.2 System Description

The SDS consists of (see Figure 3):

- Distillation vessel with a knife gate valve and furnace
- Condenser heated and cooled by a thermal fluid system
- Collection vessel
- Transfer vessel
- Sintered metal filter
- Vacuum pump.

The collected sodium is fed to a transfer vessel so that it can be safely removed and stored until it is sent to an off-INL-Site treatment and disposal facility. The SDS is a vacuum distillation

system. Waste containing sodium- is loaded into the distillation vessel, which is then sealed automatically and purged of oxygen using nitrogen gas. The vacuum pump then is started, drawing a vacuum on the system. After a vacuum of 200 mTorr is achieved, the electric furnace is turned on, and heat is applied to the distillation vessel until the minimum boiling point of sodium (approximately 380°C) is obtained, and the sodium is boiled off the waste.

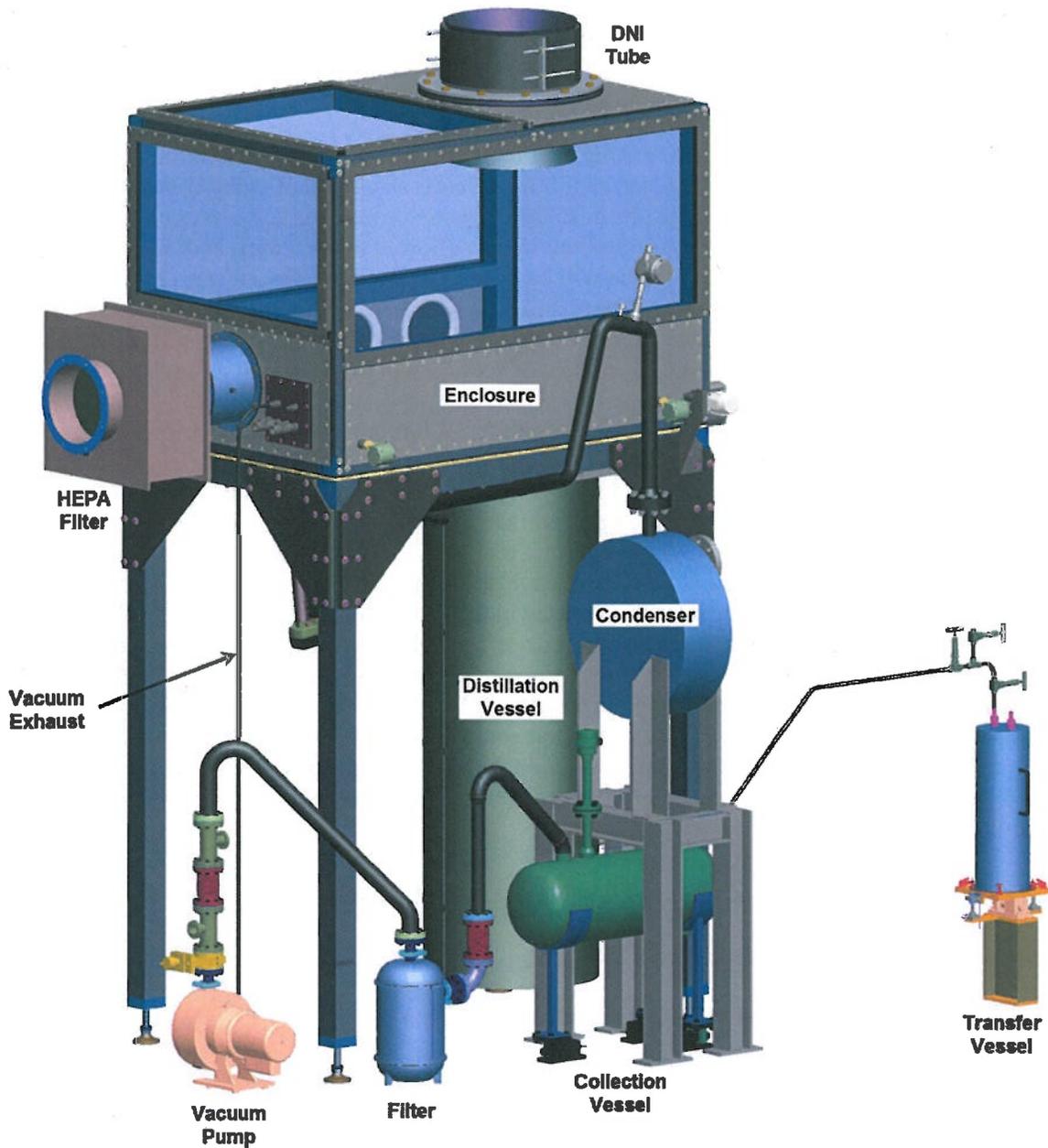


Figure 3. Sodium distillation process system.

The vacuum pump will draw off the sodium vapor, which will enter a condenser upstream of the pump. The condenser is operated at a temperature below the boiling point of sodium and above its melting point (approximately 98°C). The condenser is heated and cooled by a coil connected to a thermal fluid system that uses silicone fluid as the heat transfer medium. Silicone oil is nonreactive with sodium and is nontoxic if it is released to the environment.

The condensed sodium vapor, now a liquid, flows from the condenser into the collection vessel. The collection vessel contains the sodium until it can be transferred. The collection vessel has band heaters to heat and melt the sodium for transfer.

The sodium is transferred by melting the sodium in the collection vessel, isolating the system so it can be pressurized, pressurizing the system to 5 psig, and allowing the pressure to push the melted sodium to the transfer vessel. The collection vessel and the transfer vessel are mounted on load cells to monitor the weight in each and to control the transfer. When the transfer is complete, the system is depressurized by venting to the enclosure. Then, the transfer line is blown out with nitrogen so that no sodium will remain in the line when the transfer vessel is disconnected and a new one attached.

## **2.3 Process Exhaust System**

Downstream of the sodium collection vessel, during distillation, the remaining vapor stream continues to a sintered metal filter, operated at room temperature, where any remaining condensable vapors, including residual sodium vapors, are filtered out and collected. The filter elements are replaceable as they plug up.

The gas stream then travels through the vacuum pump and is discharged into the contamination control enclosure above the distillation vessel. The enclosure air is exhausted into the FDP cell, and the cell air is exhausted through two banks of high-efficiency particulate air (HEPA) filters and out the CPP-767 (Fluorinel Dissolution Process and Fuel Storage [FAST]) Stack.

### **2.3.1 Stack**

The FAST Stack, CPP-767-001 is an emission point for the CPP-666 building effluent that is comprised of exhaust from the FDP cell and Fuel Storage Area. Currently, airborne releases from operations in the Fuel Storage Area are assumed to be small because the majority of spent fuel handling operations is conducted underwater. The FAST building off-gas passes through two stages of HEPA filtration before being exhausted out the FAST Stack. The stack is 48.8 m (160 ft) tall, with an exit diameter of 1.65 m (5.5 ft). Monitoring of the FAST Stack (see Section 2.3.2) detected only Cs-137 in 2011, and measured the Cs release at 4.32E-07 Ci (Engineering Design File (EDF)-10251).

### **2.3.2 Stack Monitoring**

The FAST Stack emissions sampling system complies with American National Standards Institute (ANSI) N13.1-1999, as required by the National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 Code of Federal Regulations [CFR] 61.93). The sampling location in the CPP-666 heating, ventilation, and air conditioning exhaust tunnel was qualified by in-place testing (PNNL 2010). The stack sampler operates continuously, extracting a sample at a flow proportional to the stack flow. Stack flow is measured using an annubar array. Samples are collected using a shrouded probe and delivered to a particulate filter, which is analyzed by an

approved contracted laboratory, currently, for the gamma-emitting radionuclides Cs-137, Sr-90, Pu-238, and Pu-239/240.<sup>a</sup>

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a. Presently (prior to modifications described in this PTC application), these radionuclides each account for 10% or more of the potential dose from the FAST Stack.

### **3. FACILITY CLASSIFICATION**

The INL Site is a major source with potential or actual emissions of greater than 250 ton/yr of a regulated pollutant, NO<sub>x</sub>. The area is attainment or unclassifiable for all criteria pollutants. The INL Site is subject to major source permitting as applicable under 40 CFR 52.21, "Prevention of Significant Deterioration (PSD) of Air Quality," and under 40 CFR 70, Title V, air operating permit rules. The INL Site is also a major source of hazardous air pollutants (HAPs) under 40 CFR 63.

## 4. EMISSIONS ESTIMATES

Emissions estimates are based on descriptions and data contained in CWI's Integrated Waste Tracking System and information contained in BEA (2013). This report contains a summary of Lot 6 containers and applies to Lot 7 containers, given that they were generated from the same process as Lot 6 containers. The containers reviewed include those from Lots 6 and 7 listed in Table 1.

Table 1. Lots 6 and 7 container numbers.

6		7
SL019	018	034
NF025	026	045
009	007	039
052	004	040
010	024	035
014	023	B-181
037	028	
B274	048	
029	041	
003	B-309	
036	033	
016		

### 4.1 Radiological Emissions

Releases of radionuclides from the sodium recovery process are subject to 40 CFR 61, Subpart H, "National Emission Standards for Emission of Radionuclides other than Radon from Department of Energy Facilities." The effective dose equivalent (EDE) results, for a permitting determination, are above the 0.1-mrem/yr threshold (i.e., 1% of the 10-mrem/yr standard of 40 CFR 61.92 per Appendix D methodology). Use of Appendix D is required by both Subpart H, per 40 CFR 61.96, and IDAPA 58.01.01.220. Exceeding the 0.1-mrem/yr threshold triggers an ATC, per 40 CFR 61.96, to be submitted to EPA Region 10, and a PTC to be submitted to DEQ. Emissions estimates and dose calculations are detailed in Appendix A.

### 4.2 Criteria Pollutant Emissions

Based on a review of the contents of individual waste containers, as documented by the generator in the Integrated Waste Tracking System, lead, PM, PM<sub>10</sub> and PM<sub>2.5</sub> are the potential criteria pollutants in the waste. These pollutants are not expected to be released during manual sorting and repacking at ambient temperatures. Volatile organic compounds (VOCs), as precursors to ozone, are NOT identified in the waste. However, room temperature vulcanizing (RTV) silicone is believed to be in the waste and, while most would be removed during sorting, traces of RTV that are not visible could cause small releases of toxic air pollutants (TAPs), which

are all conservatively assumed to be VOCs, during the distillation process. Based on the total volatile components of the RTV being released at a rate of 0.006 lb/hr (see Appendix B), a maximum potential release of 0.03 ton/yr VOCs is projected  $[(0.006 \text{ lb/hr}) \times (8,760 \text{ hr/yr}) \times (1 \text{ ton}/2,000 \text{ lb})]$ , well below the significance level of 40 ton/yr for ozone (IDAPA 58.01.01.006.106.v). Table 2 summarizes the compliance demonstration for criteria pollutants.

Table 2. Compliance demonstration for ambient air quality standards for criteria pollutants.

Pollutant	Hourly Emission Rate (lb/hr)	Modeling Threshold <sup>a</sup> (lb/hr)	Annual Emission Rate (ton/yr)	Modeling Threshold <sup>a</sup> (ton/yr)
NO <sub>x</sub>	0	NA	0	1.2
CO	0	15	0	NA
SO <sub>2</sub>	0	0.21	0	1.2
PM/PM <sub>10</sub>	0	0.22	0	NA
PM <sub>2.5</sub>	0	0.054	0	0.35
Ozone (VOCs) <sup>b</sup>	0.006 <sup>c</sup>	NA	0.03 <sup>d</sup>	NA

- a. Modeling thresholds are Level I, given in Table 2 of the *State of Idaho Air Quality Modeling Guideline* (Idaho 2011).
- b. Per IDAPA 58.01.01.006.106.v, the ozone significant emission rate is as volatile organic compounds (VOCs).
- c. 24-hr average; see Appendix B.
- d. Emission Rate (ton/yr) =  $(0.006 \text{ lb/hr} \times 8,760 \text{ hr/yr} \times 1 \text{ ton}/2,000 \text{ lb})$ .

### 4.3 Prevention of Significant Deterioration Evaluation

The emissions from the proposed sodium distillation project were reviewed for applicability to PSD. A PSD review is required prior to the construction of any major new source, or the modification of any existing, major stationary source in an area designated as attainment or unclassifiable under sections 107(d)(1)(A)(ii) or (iii) of the federal Clean Air Act. The PSD regulations are found at 40 CFR 52.21 and at IDAPA 58.01.01.205.01 of the Idaho Administrative Code. A project is a “major modification” for a regulated pollutant if it causes the following two types of emissions increases:

- A significant emissions increase (as defined in paragraph 40 CFR 52.21(b)(40))
- A significant net emissions increase (as defined in paragraphs 40 CFR 52.21(b)(3) and (b)(23)).

Projected annual emissions increases are calculated and compared to specific thresholds, and if the projected emissions are lower than the threshold, no further PSD review is required.

The only criteria pollutant emissions expected from this project (see Section 4.2) are a small potential of 0.03 ton/yr of VOCs (see Table 2); the significance threshold for VOCs is 40 ton/yr. Therefore, there are no significant emissions increases, and this project is not a major modification.

## 4.4 State Toxic Air Pollutants

Idaho state TAPs (IDAPA 58.01.01.585 and .586) in the wastes to be processed were assessed. Because all visible combustibles, plastics, sealants, and paper are to be removed during the sorting process, these materials are not expected to be present, except in minute quantities, in the distillation vessel. To determine impacts of TAPs in material that may not be visible, and, therefore, would pass through the distillation process, an example conservative calculation was performed. The waste inventory is known to contain RTV silicone sealants, and there is a small potential for sealant components, not previously emitted during curing, to volatilize during the distillation process. Based on a sampling of RTV formulations, no RTV component release would exceed one one-thousandth of its respective IDAPA 58.01.01.585 Screening Emissions Level (see Appendix B). Table 3 summarizes non-carcinogenic TAP emissions. There are no carcinogenic TAPs emitted.

Table 3. Pre- and post- project non-carcinogenic toxic air pollutant emissions summary potential to emit.

Non-Carcinogenic Toxic Air Pollutants (sum of all emissions)	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Ethylbenzene	0	0.00075	0.00075	29	No
Methyl ether	0	0.0011	0.0011	1.04	No
Xylene	0	0.0026	0.0026	29	No
Acetic acid	0	0.0019	0.0019	1.67	No

## 4.5 Hazardous Air Pollutants

This proposed source is not a major source of hazardous air pollutants (HAPs). Table 4 summarizes the potential to emit for HAPs from this project.

Table 4. Hazardous air pollutant potential to emit summary.

Hazardous Air Pollutant	Potential to Emit (T/yr)
Ethyl benzene	0.003 <sup>a, b</sup>
Xylene	0.01 <sup>b, c, d</sup>
<b>Total</b>	<b>0.01</b>

a. Ethyl benzene potential to emit (ton/yr) = (0.00075 lb/hr × 8,760 hr/yr × 1 ton/2,000 lb).  
b. Lb/hr emission rates from Appendix B.  
c. Maximum individual HAP.  
d. Xylene potential to emit (ton/yr) = (0.00263 lb/hr × 8,760 hr/yr × 1 ton/2,000 lb).

## **5. APPLICABLE REQUIREMENTS**

This section describes the regulatory analysis of applicable air quality rules with respect to this application. The state rules or regulations followed by the applicable federal rules or regulations are presented in the following subsections.

### **5.1 State Applicable Requirements**

The following are applicable under IDAPA 58.01.01, "Rules for the Control of Air Pollution in Idaho."

#### **5.1.1 IDAPA 58.01.01.130-136, Startup, Shutdown, Scheduled Maintenance, Safety Measures, Upset, and Breakdown**

If an excess emission event occurs during startup, shutdown, scheduled maintenance, safety measures, upset, or breakdown, the permittee will comply with applicable sections of IDAPA 58.01.01.130 through 58.01.01.136, relating to excess emissions, correction of condition, startup, shutdown and scheduled maintenance requirements, upset, breakdown and safety requirements, excess emission reports, and records.

#### **5.1.2 IDAPA 58.01.01.157, Test Methods and Procedures**

If an emission test is required, the permittee will adhere to procedures outlined in IDAPA 58.01.01.157.

#### **5.1.3 IDAPA 58.01.01.161, Toxic Substances**

"Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation."

In accordance with IDAPA 58.01.01.585 and .586, potential emissions estimates from the process are presented in Appendix B, which details that emissions do not have the impacts addressed by the regulation.

#### **5.1.4 IDAPA 58.01.01.200, Procedures and Requirements for Permits to Construct**

Upon pre-permit construction approval by DEQ, the permittee will follow the procedures and requirements outlined under IDAPA 58.01.01.200 for obtaining a PTC.

#### **5.1.5 IDAPA 58.01.01.201, Permit to Construct Required**

The proposed project does not meet the exemption criteria in Sections 220 through 223 of the rules; therefore, a PTC is required.

#### **5.1.6 IDAPA 58.01.01.203.02, National Ambient Air Quality Standards (NAAQS)**

The applicant has demonstrated that the facility will comply with all applicable emissions standards, ambient air quality standards, and toxic increments. In particular, in the application, it

has been shown that the facility will not cause or significantly contribute to a violation of any air quality standard.

No significant criteria pollutant emissions are expected from this project (see section 4.2).

#### **5.1.7 IDAPA 58.01.01.205, (40 CFR 52.21), Permit Requirements for New Major Facilities or Major Modifications in Attainment or Unclassifiable Areas**

Section 205 incorporates the federal PSD rule requirements.

The permittee reviewed this project for PSD applicability and determined that the emissions increase from the project do not meet or exceed a significant threshold as defined at IDAPA 58.01.01.006 given that no significant criteria pollutant emissions are expected (see Section 4.3).

#### **5.1.8 IDAPA 58.01.01.210, Demonstration of Preconstruction Compliance with Toxic Standards**

“In accordance with Subsection 203.03, the applicant shall demonstrate preconstruction compliance with Section 161 to the satisfaction of the Department. The accuracy, completeness, execution, and results of the demonstration are all subject to review and approval by the Department.”

The permittee has demonstrated preconstruction compliance for TAPs identified in this permit application (see Table 3). See emissions calculations in Appendix B.

#### **5.1.9 IDAPA 58.01.01.213, Pre-Permit Construction**

The permittee will comply with procedures and regulations outlined in this section in order to obtain pre-permit construction approval as discussed in Section 1 of this application.

#### **5.1.10 IDAPA 58.01.01.213.02.A, Informational Meeting**

“Within ten (10) days after the submittal of the pre-permit construction approval application, the owner or operator shall hold an informational meeting in at least one (1) location in the region in which the stationary source or facility is to be located. The informational meeting shall be made known by notice published at least ten (10) days before the meeting in a newspaper of general circulation in the county(ies) in which the stationary source or facility is to be located. A copy of such notice shall be included in the application.”

An informational meeting will be held in Idaho Falls on or about April 4, 2013. See a copy of the Legal Notice in Appendix D.

#### **5.1.11 IDAPA 58.01.01.224, Permit to Construct Application Fee**

The permittee satisfied the PTC application fee requirement by submitting a fee of \$1,000 with this application.

#### **5.1.12 IDAPA 58.01.01.225, Permit to Construct Processing Fee**

The total emissions from the proposed new facility are less than 1 ton/yr. Therefore, the associated processing fee is \$1,000. It is the permittee's understanding that DEQ will issue a

letter confirming the processing fee amount. No PTC can be issued without first paying the required processing fee.

**5.1.13 IDAPA 58.01.01.380 and 381, Changes to Tier I Operating Permits and Administrative Permit Amendments**

The permittee is requesting that the Tier I Operating Permit (DEQ 2013) be changed as an administrative amendment. Under IDAPA 58.01.01.381.01.e, the amendment is to incorporate into the Tier I Operating Permit requirements from a PTC issued by DEQ in accordance with Subsection 209.05.c.

**5.1.14 IDAPA 58.01.01.578, Designation of Attainment, Unclassifiable, and Nonattainment Areas**

The proposed site for the stationary source is in an attainment or unclassifiable area.

**5.1.15 IDAPA 58.01.01.590, New Source Performance Standards**

No new source performance standards are applicable to the sodium distillation project.

**5.1.16 IDAPA 58.01.01.591, National Emission Standards for Hazardous Air Pollutants**

The proposed source is regulated under 40 CFR 61, Subpart H, "National Emission Standards for Emissions of Radionuclides other than Radon from Department of Energy Facilities." The requirements of 40 CFR 61, Subpart H, apply to this project. This is the only NESHAP applicable to this source. These requirements are already specified for all the emission units in the INL Site Tier I Operating Permit, Section 2, "Facility-Wide Conditions." Compliance is demonstrated by meeting the requirements in the Tier I Operating Permit.

**5.1.17 IDAPA 58.01.01.625, Visible Emissions**

"A person shall not discharge any air pollutant into the atmosphere from any point of emission for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period which is greater than twenty percent (20%) opacity as determined by this section."

Emissions from this facility are subject to the State of Idaho visible emissions standard of 20% opacity.

**5.1.18 IDAPA 58.01.01.650 and 651, Rules for Control of Fugitive Dust and General Rules**

All reasonable precautions shall be taken to prevent fugitive dust from becoming airborne. Consideration shall be given to proximity to human habitation and dust-generating activities.

No dust-generating materials are expected to be exposed in the process, road surfaces are paved, and the site is not proximate to human habitation.

### **5.1.19 IDAPA 58.01.01.701, Particulate Matter – Process Weight Limitations**

“No person shall emit into the atmosphere from any process or process equipment commencing operations on or after October 1, 1979 particulate emissions in excess of the amount shown by the following equation.”

No particulate matter (PM) emissions are anticipated from processes in this project.

### **5.1.20 IDAPA 58.01.01.776, General Restrictions**

No emission of odorous gases, liquids, or solids into the atmosphere in such quantities as to cause air pollution is anticipated from this project.

## **5.2 Federal Applicable Requirements**

### **5.2.1 40 CFR 61 Subpart H, National Emissions Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities**

#### **5.2.1.1 40 CFR 61.92, Standard**

Emissions of radionuclides to the ambient air shall not exceed those amounts that would cause any member of the public to receive a dose equivalent greater than 10 mrem/yr from the INL Site.

The EDE to a hypothetical maximally exposed individual (MEI) from the sodium distillation project is estimated at  $8.7E-07$  mrem/yr, as shown in Appendix A.

#### **5.2.1.2 40 CFR 61.93, Emission Monitoring and Test Procedures**

As specified by 40 CFR 61.93(e), radionuclide emissions were evaluated to determine whether the stack release point is subject to the new source emission measurement requirements of 40 CFR 61.93(c). In evaluating the potential of a release point to discharge radionuclides for the purposes of determining monitoring requirements, the estimated unmitigated radionuclide release rates were calculated. The resulting EDE was calculated based on the discharge of the effluent stream that would result if all pollution control equipment did not exist, but the facility's operations were otherwise normal (40 CFR 61.93(f)). The results are shown in Appendix A, with a calculated potential EDE of 6.1 mrem/yr. Because the potential dose is greater than the 0.1-mrem/yr threshold, the radioactivity monitoring requirements of 40 CFR 61.93(c) apply.

The FDP cell air is exhausted through two banks of HEPA filters and out the CPP-767 (FAST) Stack. The FAST Stack effluent is measured using the methods specified in ANSI/HPS N13.1-1999 and sections (c)(1) and (c)(2) of 40 CFR 61.93 (PNNL 2010). In accordance with 40 CFR 61.93(e), radionuclides that could contribute greater than 10% of the potential EDE shall be measured. For the SDS, Sr-90, Cs-137, and Pu-239/240, each exceeds 10% of the potential EDE (see Appendix A) and, therefore, will be measured. These radionuclides are presently measured by the existing monitoring system (see Section 2.3.2).

### **5.2.1.3 40 CFR 61.94 and 95, Compliance Reporting and Recordkeeping Requirements**

The permittee shall submit an annual report and maintain records documenting radionuclide emissions and EDE values in accordance with 40 CFR 61.94 and 61.95. FAST Stack emissions are included in annual reports submitted to DEQ and EPA by the permittee.

### **5.2.1.4 40 CFR 61.96, Applications to Construct or Modify**

The SDS requires a NESHAPs ATC as specified in 40 CFR 61.96, based on the dose calculation shown in Appendix A, using Appendix D of 40 CFR 61, "Methods for Estimating Radionuclide Emissions." The calculated annual dose to the MEI, based on the Appendix D method, is 610 mrem/yr, which is greater than 1% of the standard (i.e., 0.1 mrem/yr).

The permittee is submitting this application for an ATC as required by 40 CFR 61.96.

### **5.2.2 40 CFR 63, National Emissions Standards for Hazardous Air Pollutants for Source Categories**

40 CFR 61, Subpart H, is the only NESHAP that applies to this project. No other NESHAP applies to this project because no other source categories apply.

### **5.2.3 40 CFR 64, Compliance Assurance Monitoring**

Compliance assurance monitoring provisions are not applicable to the proposed new source. To be subject to compliance assurance monitoring, a source must meet ALL of the following criteria:

- Located at a major source required to obtain a Title V operating permit
- Subject to an emission limitation or standard for the applicable regulated air pollutant that is not exempt
- A control device is used to achieve compliance with the emission limitation or standard
- The potential uncontrolled emissions of the applicable regulated air pollutant are greater than or equal to the major source thresholds (100 ton/yr of particulate matter [PM<sub>10</sub>], nitrogen oxides [NO<sub>x</sub>], sulfur dioxide ([O<sub>2</sub>], volatile organic compounds [VOCs], carbon monoxide [CO], or lead, 10 ton/yr of any hazardous air pollutant [HAP], or 25 ton/yr of any combination of HAPs)
- The pollutant-specific emissions unit is not an exempt backup utility power emissions unit.

The potential emissions of PM<sub>2.5</sub>, PM<sub>10</sub>, NO<sub>x</sub>, SO<sub>2</sub>, VOC, and HAPs do not meet or exceed the thresholds. Control devices are not present at the emissions unit for NO<sub>x</sub>, SO<sub>2</sub>, VOC, CO, or HAPs.

## 6. REFERENCES

- 40 CFR 52.21, 2013, "Prevention of Significant Deterioration of Air Quality," *Code of Federal Regulations*, Office of the Federal Register, June 14, 2013.
- 40 CFR 61, Appendix D, 2013, "Methods for Estimating Radionuclide Emissions," *Code of Federal Regulations*, Office of Federal Register, January 15, 2013.
- 40 CFR 61, Subpart H, 2013, "National Emission Standards for Emission of Radionuclides other than Radon from Department of Energy Facilities," *Code of Federal Regulations*, Office of Federal Register, January 15, 2013.
- 40 CFR 61.92, 2013, "Standard," *Code of Federal Regulations*, Office of the Federal Register, January 15, 2013.
- 40 CFR 61.93, 2013, "Emission Monitoring and Test Procedures," *Code of Federal Regulations*, Office of the Federal Register, January 15, 2013.
- 40 CFR 61.96, 2013, "Applications to Construct or Modify," *Code of Federal Regulations*, Office of the Federal Register, January 15, 2013.
- 40 CFR 63, 2012, "National Emission Standards for Hazardous Air Pollutants for Source Categories," *Code of Federal Regulations*, Office of the Federal Register, December 27, 2012.
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- Idaho, 1995, *Settlement Agreement*, State of Idaho, Department of Energy, and Department of the Navy, to resolve all issues in *Public Service Co. of Colorado v. Batt*, No. CV-91-0035-S-EJL (D. Id.) and *United States v. Batt*, No. CV-91-0065-S-EJL (D. Id.), October 16, 1995.
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- IDAPA 58.01.01, 2012, "Rules for the Control of Air Pollution in Idaho," Idaho Administrative Procedures Act, Idaho Department of Environmental Quality.
- IDAPA 58.01.01.006.106.v, 2006, "Definitions," "Significant," Idaho Administrative Procedures Act, Idaho Department of Environmental Quality.
- IDAPA 58.01.01.205.01, 2008, "Incorporated Federal Program Requirements," Idaho Administrative Procedures Act, Idaho Department of Environmental Quality.
- IDAPA 58.01.01.213, 1998, "Pre-Permit Construction," Idaho Administrative Procedures Act, Idaho Department of Environmental Quality.
- IDAPA 58.01.01.220, 2006, "General Exemption Criteria for Permit to Construct Exemptions," Idaho Administrative Procedures Act, Idaho Department of Environmental Quality.
- IDAPA 58.01.01.585, 1995, "Toxic Air Pollutants Non-Carcinogenic Increments," Idaho Administrative Procedures Act, Idaho Department of Environmental Quality.
- IDAPA 58.01.01.586, 2001, "Toxic Air Pollutants Carcinogenic Increments," Idaho Administrative Procedures Act, Idaho Department of Environmental Quality.
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- Staley, C. S., M. L. Abbott, and P. D. Ritter, 2004, *INEEL Air Modeling Protocol*, INEEL/EXT-04-02511, Idaho National Engineering and Environmental Laboratory, December 2004.

**Appendix A**  
**Radionuclide Source Term and Dose Calculations**



# Appendix A

## Radionuclide Source Term and Dose Calculations

### A-1 Source Term

The radionuclide inventory was obtained from the INL Site's Integrated Waste Tracking System database. The inventory was not decayed in this analysis because the permitting conclusions would not be impacted significantly by the relatively long half-lives of the radionuclides contributing to the dose. Release and dose estimates are developed for three scenarios and purposes (see Table A-1).

Table A-1. Release fractions and mitigations applied to three emissions scenarios.

Purpose	Release Fraction Applied to Radionuclide Inventory	HEPA Filtration
Permitting determination	1 (100%)	None
Monitoring determination	0.01 (1%) <sup>a</sup>	None
Best engineering estimate	0.01 (1%) <sup>a</sup>	2 HEPAs each @ 99.97 % efficiency <sup>a</sup>

a. Except gases, which are 100% released (release fraction of 1).

Because of the variety of waste forms and uncertainty about where in the wastes most of the activity resides, all material is assumed to be processed at greater than 100°C in the sodium distillation process. Therefore, per 40 CFR 61, Appendix D, all radionuclides must be considered gases, and a conservative release fraction of 1 (100%) is applied to the entire source term for determining permitting applicability. For the monitoring determination and best engineering estimates of releases, 1% of the inventory is assumed released from the process. For the best engineering release estimate,<sup>b</sup> that 1% is further reduced by two stages of HEPA filters, each assumed to be 99.97% efficient. One-hundred percent of gaseous radionuclides (C-14, H-3, and Kr-85) in the source term is assumed released to the atmosphere for all three scenarios. In reality, distillation of the waste is designed to remove the sodium from the waste without removing the radionuclides; therefore, radionuclide releases are expected to be below those presented here.

### A-2 Dose Calculations

Unit Ci doses (mrem/yr/Ci) were calculated for all radionuclides in the source term using the CAP88-PC, Version 3.0 (EPA 2007) code. The CAP88-PC code is approved by the EPA to show compliance with the NESHAP Subpart H standard. The CAP88-PC code calculates environmental concentrations of radionuclides caused by emissions and calculates individual dose using Federal Guidance Report 13 (EPA 1999) methods. Emissions from CPP-666 were modeled as an elevated release point (Stack CPP-767, 48.8 m), and for conservatism, with zero plume rise. Emissions are modeled using appropriate meteorological data (Staley, Abbott, and Ritter 2004). The MEI dose is calculated for the

b. The term "best engineering" implies an atmospheric release estimate that is more realistic than those for permit and monitoring determinations, but still conservative. The distillation vessel will operate at the boiling temperature of sodium, which is below that of radionuclides in the waste. Therefore, no radionuclides are actually expected to be released, but 1% is assumed for conservatism.

facility-specific MEI location, 13.9 km south-southwest of INTEC (Staley, Abbott, and Ritter 2004). The hypothetical MEI is assumed to live at the location off the INL Site having the highest annual time-integrated exposure to emissions from INTEC.

The National Oceanic and Atmospheric Administration collects meteorological data 10 m and 61 m above ground surface using instruments mounted on the GRID 3 meteorological tower near INTEC. Data collected from 1994 through 2003 were processed (EDF-6290) to develop 10-year averaged records in Stability Array (STAR) format (NOAA 1997). The 10-year averaged STAR file subsequently was processed using a CAP88-PC utility and used as input for dispersion and dose calculations.

The default parameter values for the CAP88 model were used for all of the model input. "Local" food production is used for MEI calculations. The CAP88 output files are included as Attachment 1 to this appendix.

### **A-3 RESULTS**

The calculated radiological releases and resulting doses for processing Lots 6 and 7 wastes at CPP-666 are presented in Table A-2. The permitting determination dose (610 mrem/yr) exceeds the 0.1-mrem/yr threshold, calculated per 40 CFR Part 61, Appendix D, for both obtaining a PTC from DEQ and an ATC from EPA.

The monitoring determination dose (6.1 mrem) exceeds the threshold of 0.1 mrem/yr. Releases from CPP-767 are presently, and will be continuously monitored using approved methods per 40 CFR 61.93(c). Doses from the radionuclides Cs-137, Pu-239, Pu-240, and Sr-90 exceed 10% of the monitoring dose and are, therefore, required to be monitored; those nuclides are monitored by the existing program for Stack CPP-767. The best engineering estimated dose, still considered conservative, is 8.7E-07 mrem.

Table A-2. Radionuclide inventory, releases, and doses for the Sodium Distillation Project.

Nuclide	Release			Best					
	Lot 6 Inventory (Ci)	Lot 7 Inventory (Ci)	Assumed for Permitting Determination (Ci) <sup>a</sup>	Release Assumed for Monitoring Determination (Ci) <sup>b</sup>	Engineering Release Estimate (Ci) <sup>c</sup>	CAP-88 Unit Ci Dose <sup>d</sup> (mrem/yr/Ci)	Permitting Determination Dose (mrem/yr)	Monitoring Determination Dose (mrem/yr)	Best Engineering Estimated Dose (mrem/yr)
Am-241	9.17E+03	0.00E+00	9.17E+03	9.17E+05	8.25E-12	2.45E+00	2.25E-02	2.25E-04	2.02E-11
C-14	0.00E+00	4.70E-05	4.70E-05	4.70E-05	4.70E-05	3.73E-04	1.75E-08	1.75E-08	1.75E-08
Ce-141	0.00E+00	1.43E-03	1.43E-03	1.43E-05	1.29E-12	1.74E-04	2.49E-07	2.49E-09	2.24E-16
Ce-144	2.93E+03	3.45E+01	2.96E+03	2.96E+01	2.66E-06	2.00E-03	5.91E+00	5.91E-02	5.32E-09
Co-58	3.01E+04	1.06E+02	3.02E+04	3.02E+02	2.72E-05	1.56E-03	4.71E+01	4.71E-01	4.24E-08
Co-60	1.76E+03	2.03E+01	1.78E+03	1.78E+01	1.60E-06	1.65E-02	2.94E+01	2.94E-01	2.64E-08
Cr-51	1.84E+03	5.93E+00	1.85E+03	1.85E+01	1.67E-06	1.74E-05	3.22E-02	3.22E-04	2.90E-11
Cs-134	5.87E+02	7.46E+00	5.95E+02	5.95E+00	5.36E-07	7.69E-02	4.58E+01	4.58E-01	4.12E-08
<b>Cs-137/Ba-137m<sup>e</sup></b>	1.55E+03	1.57E+01	1.56E+03	1.56E+01	1.40E-06	6.17E-02	9.63E+01	9.63E-01	8.66E-08
Eu-154	8.11E-01	7.46E-03	8.18E-01	8.18E-03	7.36E-10	4.91E-03	4.02E-03	4.02E-05	3.61E-12
Eu-155	5.19E+00	1.53E-01	5.34E+00	5.34E-02	4.81E-09	4.32E-04	2.31E-03	2.31E-05	2.08E-12
Fe-55	0.00E+00	1.78E+00	1.78E+00	1.78E-02	1.60E-09	2.10E-04	3.74E-04	3.74E-06	3.36E-13
Fe-59	2.10E+02	4.23E+00	2.15E+02	2.15E+00	1.94E-07	1.07E-03	2.30E-01	2.30E-03	2.07E-10
H-3	6.66E-07	0.00E+00	6.66E-07	6.66E-07	6.66E-07	1.35E-03	8.99E-10	8.99E-10	8.99E-10
Kr-85	8.15E+00	0.00E+00	8.15E+00	8.15E+00	8.15E+00	3.71E-08	3.02E-07	3.02E-07	3.02E-07
Mn-54	1.78E+04	1.26E+02	1.80E+04	1.80E+02	1.62E-05	2.74E-03	4.93E+01	4.93E-01	4.44E-08
Mo-93	0.00E+00	5.25E-05	5.25E-05	5.25E-07	4.73E-14	2.58E-03	1.35E-07	1.35E-09	1.22E-16
Nb-94	0.00E+00	1.15E-05	1.15E-05	1.15E-07	1.04E-14	4.07E-03	4.68E-08	4.68E-10	4.21E-17
Nb-95	0.00E+00	6.14E-03	6.14E-03	6.14E-05	5.53E-12	5.11E-04	3.14E-06	3.14E-08	2.82E-15
Ni-59	0.00E+00	2.18E-04	2.18E-04	2.18E-06	1.96E-13	1.33E-04	2.90E-08	2.90E-10	2.61E-17
Ni-63	0.00E+00	1.58E-02	1.58E-02	1.58E-04	1.42E-11	3.26E-04	5.15E-06	5.15E-08	4.64E-15
Np-237	6.35E-05	0.00E+00	6.35E-05	6.35E-07	5.72E-14	8.70E-01	5.52E-05	5.52E-07	4.97E-14
Pa-231	1.39E-10	0.00E+00	1.39E-10	1.39E-12	1.25E-19	3.56E+00	4.95E-10	4.95E-12	4.45E-19
Pa-233	2.82E-05	0.00E+00	2.82E-05	2.82E-07	2.54E-14	6.40E-04	1.80E-08	1.80E-10	1.62E-17
Pa-234	6.78E-08	0.00E+00	6.78E-08	6.78E-10	6.10E-17	2.89E-05	1.96E-12	1.96E-14	1.76E-21
Pa-234m	6.78E-05	0.00E+00	6.78E-05	6.78E-07	6.10E-14	1.26E-09	8.54E-14	8.54E-16	7.69E-23

Table A-2. (continued).

Nuclide	Lot 6 Inventory		Lot 7 Inventory		Release Assumed for Permitting Determination		Release Assumed for Monitoring Determination		Best Engineering Release Estimate		CAP-88 Unit Ci Dose <sup>d</sup>		Permitting Determination Dose		Monitoring Determination Dose		Best Engineering Estimated Dose	
	(Ci)	(Ci)	(Ci)	(Ci)	(Ci) <sup>a</sup>	(Ci) <sup>b</sup>	(Ci) <sup>c</sup>	(Ci) <sup>c</sup>	(Ci) <sup>c</sup>	(mrem/yr)	(mrem/yr)	(mrem/yr)	(mrem/yr)	(mrem/yr)	(mrem/yr)	(mrem/yr)	(mrem/yr)	(mrem/yr)
Pm-147	8.87E+01	0.00E+00	0.00E+00	8.87E+01	8.87E+01	8.87E-01	7.98E-08	2.29E-04	2.29E-04	2.03E-02	2.03E-04	2.03E-02	2.03E-04	2.03E-02	2.03E-04	2.03E-02	2.03E-04	1.83E-11
Pr-144	7.06E+01	4.76E-01	4.76E-01	7.11E+01	7.11E+01	7.11E-01	6.40E-08	7.39E-07	7.39E-07	5.25E-05	5.25E-07	5.25E-05	5.25E-07	5.25E-05	5.25E-07	5.25E-05	5.25E-07	4.73E-14
Pu-238	2.89E-01	0.00E+00	0.00E+00	2.89E-01	2.89E-01	2.89E-03	2.60E-10	1.74E+00	1.74E+00	5.03E-01	5.03E-03	5.03E-01	5.03E-03	5.03E-01	5.03E-03	5.03E-01	5.03E-03	4.53E-10
<b>Pu-239<sup>e</sup></b>	6.38E+01	1.28E-02	1.28E-02	6.38E+01	6.38E+01	6.38E-01	5.74E-08	1.89E+00	1.89E+00	1.21E+02	1.21E+00	1.21E+02	1.21E+00	1.21E+02	1.21E+00	1.21E+02	1.21E+00	1.09E-07
<b>Pu-240<sup>e</sup></b>	3.32E+01	9.42E-03	9.42E-03	3.32E+01	3.32E+01	3.32E-01	2.99E-08	1.90E+00	1.90E+00	6.31E+01	6.31E-01	6.31E+01	6.31E-01	6.31E+01	6.31E-01	6.31E+01	6.31E-01	5.68E-08
Rb-83	3.23E+01	0.00E+00	0.00E+00	3.23E+01	3.23E+01	3.23E-01	2.91E-08	3.44E-03	3.44E-03	1.11E-01	1.11E-03	1.11E-01	1.11E-03	1.11E-01	1.11E-03	1.11E-01	1.11E-03	1.00E-10
Rh-106	1.14E+02	2.23E-02	2.23E-02	1.14E+02	1.14E+02	1.14E+00	1.03E-07	6.34E-04	6.34E-04	7.23E-02	7.23E-04	7.23E-02	7.23E-04	7.23E-02	7.23E-04	7.23E-02	7.23E-04	6.50E-11
Ru-106	1.15E+02	2.23E-02	2.23E-02	1.15E+02	1.15E+02	1.15E+00	1.04E-07	3.00E-03	3.00E-03	3.45E-01	3.45E-03	3.45E-01	3.45E-03	3.45E-01	3.45E-03	3.45E-01	3.45E-03	3.11E-10
Sb-125/Te-125m	8.13E+00	0.00E+00	0.00E+00	8.13E+00	8.13E+00	8.13E-02	7.32E-09	1.45E-03	1.45E-03	1.18E-02	1.18E-04	1.18E-02	1.18E-04	1.18E-02	1.18E-04	1.18E-02	1.18E-04	1.06E-11
Se-75	3.23E+01	0.00E+00	0.00E+00	3.23E+01	3.23E+01	3.23E-01	2.91E-08	4.78E-03	4.78E-03	1.54E-01	1.54E-03	1.54E-01	1.54E-03	1.54E-01	1.54E-03	1.54E-01	1.54E-03	1.39E-10
Sm-151	1.72E+00	0.00E+00	0.00E+00	1.72E+00	1.72E+00	1.72E-02	1.55E-09	1.66E-04	1.66E-04	2.86E-04	2.86E-06	2.86E-04	2.86E-06	2.86E-04	2.86E-06	2.86E-04	2.86E-06	2.57E-13
<b>Sr-90/Y-90<sup>e</sup></b>	1.42E+03	1.69E+01	1.69E+01	1.44E+03	1.44E+03	1.44E+01	1.30E-06	1.08E-01	1.08E-01	1.56E+02	1.56E+00	1.56E+02	1.56E+00	1.56E+02	1.56E+00	1.56E+02	1.56E+00	1.40E-07
Tc-99	0.00E+00	5.21E-06	5.21E-06	5.21E-06	5.21E-06	5.21E-08	4.69E-15	1.95E-02	1.95E-02	1.02E-07	1.02E-09	1.02E-07	1.02E-09	1.02E-07	1.02E-09	1.02E-07	1.02E-09	9.14E-17
Th-231	1.04E-05	0.00E+00	0.00E+00	1.04E-05	1.04E-05	1.04E-07	9.36E-15	4.77E-05	4.77E-05	4.96E-10	4.96E-12	4.96E-10	4.96E-12	4.96E-10	4.96E-12	4.96E-10	4.96E-12	4.47E-19
Th-234	6.78E-05	0.00E+00	0.00E+00	6.78E-05	6.78E-05	6.78E-07	6.10E-14	8.11E-04	8.11E-04	5.50E-08	5.50E-10	5.50E-08	5.50E-10	5.50E-08	5.50E-10	5.50E-08	5.50E-10	4.95E-17
U-233	8.44E-11	0.00E+00	0.00E+00	8.44E-11	8.44E-11	8.44E-13	7.60E-20	1.44E-01	1.44E-01	1.22E-11	1.22E-13	1.22E-11	1.22E-13	1.22E-11	1.22E-13	1.22E-11	1.22E-13	1.09E-20
U234	1.32E-10	0.00E+00	0.00E+00	1.32E-10	1.32E-10	1.32E-12	1.19E-19	1.38E-01	1.38E-01	1.82E-11	1.82E-13	1.82E-11	1.82E-13	1.82E-11	1.82E-13	1.82E-11	1.82E-13	1.64E-20
U-235	5.62E-03	1.42E-04	1.42E-04	5.77E-03	5.77E-03	5.77E-05	5.19E-12	1.23E-01	1.23E-01	7.10E-04	7.10E-06	7.10E-04	7.10E-06	7.10E-04	7.10E-06	7.10E-04	7.10E-06	6.39E-13
U-236	4.25E-08	0.00E+00	0.00E+00	4.25E-08	4.25E-08	4.25E-10	3.83E-17	1.27E-01	1.27E-01	5.40E-09	5.40E-11	5.40E-09	5.40E-11	5.40E-09	5.40E-11	5.40E-09	5.40E-11	4.86E-18
U-238	4.05E-03	9.50E-03	9.50E-03	1.35E-02	1.35E-02	1.35E-04	1.22E-11	1.14E-01	1.14E-01	1.54E-03	1.54E-05	1.54E-03	1.54E-05	1.54E-03	1.54E-05	1.54E-03	1.54E-05	1.39E-12
<b>Total</b>										<b>6.1E+02</b>	<b>6.1E+00</b>	<b>6.1E+02</b>	<b>6.1E+00</b>	<b>6.1E+02</b>	<b>6.1E+00</b>	<b>6.1E+02</b>	<b>6.1E+00</b>	<b>8.7E-07</b>

a. 100% of total radionuclide inventory of Lots 6 and 7

b. Conservatively assumes 1% of total inventory is emitted from sodium distillation process; no downstream filtration credited.

c. Assumes two stages of HEPA filtration applied to the 1% inventory in (b); release = Inventory × 1% × (1-0.9997) × (1-0.9997)

d. See CAP88 output files in Attachment 1.

e. The dose from each of these radionuclides exceeds 10% of the total monitoring dose, and, therefore, is required to be monitored.

# Attachment 1 to Appendix A

## CAP88 Output Files

C A P 8 8 - P C

Version 3.0

Clean Air Act Assessment Package - 1988

### S Y N O P S I S R E P O R T

Non-Radon Individual Assessment  
Nov 12, 2012 01:20 pm

Facility: INL  
Address: INTEC  
          Scoville  
City: Idaho Falls  
State: ID               Zip: 83415

Source Category: CPP-767  
Source Type: Stack  
Emission Year:

Comments: CPP-767  
          Lots 6 & 7

Effective Dose Equivalent  
(mrem/year)

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6.18E+00

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At This Location: 13900 Meters South Southwest

Dataset Name: FAST Lots 6 & 7  
Dataset Date: 11/12/2012 12:17:00 PM  
Wind File: C:\Program Files\CAP88-PC30\Wndfiles\GRIU940

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 13900 Meters South Southwest  
Lifetime Fatal Cancer Risk: 8.42E-07

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
Adrenals	2.01E-01
B Surfac	1.45E+01
Breasts	1.59E-01
St Wall	1.91E-01
ULI Wall	2.26E-01
Kidneys	3.13E-01
Lungs	3.66E-01
Ovaries	3.50E-01
R Marrow	6.99E-01
Spleen	1.93E-01
Thymus	1.84E-01
Uterus	2.07E-01
Bld Wall	2.00E-01
Brain	1.64E-01
Esophagu	2.19E-01
SI Wall	2.08E-01
LLI Wall	2.84E-01
Liver	6.61E-01
Muscle	1.80E-01
Pancreas	2.05E-01
Skin	1.63E-01
Testes	3.19E-01
Thyroid	1.85E-01
EFFEC	6.18E+00

RADIONUCLIDE EMISSIONS DURING THE YEAR

Nuclide	Type	Size	Source	
			#1 Ci/y	TOTAL Ci/y
Am-241	M	1	1.0E+00	1.0E+00
Ba-137m	M	1	9.5E-01	9.5E-01
C-14	M	1	1.0E+00	1.0E+00
Ce-141	M	1	1.0E+00	1.0E+00
Ce-144	M	1	1.0E+00	1.0E+00
Co-58	M	1	1.0E+00	1.0E+00
Co-60	M	1	1.0E+00	1.0E+00
Cr-51	M	1	1.0E+00	1.0E+00
Cs-134	F	1	1.0E+00	1.0E+00
Cs-137	F	1	1.0E+00	1.0E+00
Eu-154	M	1	1.0E+00	1.0E+00
Eu-155	M	1	1.0E+00	1.0E+00
Fe-55	M	1	1.0E+00	1.0E+00
Fe-59	M	1	1.0E+00	1.0E+00
H-3	V	0	1.0E+00	1.0E+00
Kr-85	G	0	1.0E+00	1.0E+00
Mn-54	M	1	1.0E+00	1.0E+00
Mo-93	M	1	1.0E+00	1.0E+00
Nb-94	M	1	1.0E+00	1.0E+00
Nb-95	M	1	1.0E+00	1.0E+00
Ni-59	M	1	1.0E+00	1.0E+00
Ni-63	M	1	1.0E+00	1.0E+00
Np-237	M	1	1.0E+00	1.0E+00
Pa-231	M	1	1.0E+00	1.0E+00
Pa-233	M	1	1.0E+00	1.0E+00
Pa-234	M	1	1.0E+00	1.0E+00
Pa-234m	M	1	1.0E+00	1.0E+00
Pm-147	M	1	1.0E+00	1.0E+00

SITE INFORMATION

Temperature: 6 degrees C  
Precipitation: 19 cm/y  
Humidity: 4 g/cu m  
Mixing Height: 800 m

individual. User specified location of max exposed

(ILOC, JLOC): 8, 1

SOURCE INFORMATION

Source Number: 1  

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Stack Height (m): 48.80  
Diameter (m): 1.65  
  
Plume Rise  
Buoyant (cal/s): 0.00  
(Heat Release Rate)

AGRICULTURAL DATA

	<u>Vegetable</u>	<u>Milk</u>	<u>Meat</u>
Fraction Home Produced:	1.000	1.000	1.000
Fraction From Assessment Area:	0.000	0.000	0.000
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.  
Default Values used.

DISTANCES (M) USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

13900

C A P 8 8 - P C

Version 3.0

Clean Air Act Assessment Package - 1988

S D O S E   A N D   R I S K   E Q U I V A L E N T   S U M M A R I E

Non-Radon Individual Assessment  
Nov 12, 2012 01:20 pm

Facility: INL  
Address: INTEC  
          Scoville  
City: Idaho Falls  
State: ID           Zip: 83415

Source Category: CPP-767  
Source Type: Stack  
Emission Year:

Comments: CPP-767  
          Lots 6 & 7

Dataset Name: FAST Lots 6 & 7  
Dataset Date: 11/12/2012 12:17:00 PM  
Wind File: C:\Program Files\CAP88-  
PC30\Wndfiles\GRIU9403.WND

## ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
Adrenals	2.01E-01
B Surfac	1.45E+01
Breasts	1.59E-01
St Wall	1.91E-01
ULI Wall	2.26E-01
Kidneys	3.13E-01
Lungs	3.66E-01
Ovaries	3.50E-01
R Marrow	6.99E-01
Spleen	1.93E-01
Thymus	1.84E-01
Uterus	2.07E-01
Bld Wall	2.00E-01
Brain	1.64E-01
Esophagu	2.19E-01
SI Wall	2.08E-01
LLI Wall	2.84E-01
Liver	6.61E-01
Muscle	1.80E-01
Pancreas	2.05E-01
Skin	1.63E-01
Testes	3.19E-01
Thyroid	1.85E-01
EFFEC	6.18E+00

## PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	3.13E-01
INHALATION	5.85E+00
AIR IMMERSION	9.06E-05
GROUND SURFACE	1.93E-02
INTERNAL	6.16E+00
EXTERNAL	1.94E-02
TOTAL	6.18E+00

## NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
Am-241	1.58E+00
Np-237	8.70E-01
Pa-233	6.40E-04
U-233	1.18E-08
Th-229	0.00E+00
Ra-225	0.00E+00
Ac-225	0.00E+00
Fr-221	0.00E+00
At-217	0.00E+00
Bi-213	0.00E+00
Po-213	0.00E+00
Pb-209	0.00E+00
Tl-209	0.00E+00
C-14	3.73E-04
Ce-141	1.74E-04
Ce-144	1.99E-03
Pr-144m	3.25E-07
Pr-144	5.04E-06
Co-58	1.56E-03
Co-60	1.65E-02
Cr-51	1.74E-05
Cs-134	7.69E-02
Cs-137	6.05E-02
Ba-137m	1.21E-03
Eu-154	4.91E-03
Eu-155	4.32E-04
Fe-55	2.10E-04
Fe-59	1.07E-03
H-3	1.35E-05
Kr-85	3.71E-08
Mn-54	2.74E-03
Mo-93	2.58E-03
Nb-93m	4.01E-07
Nb-94	4.07E-03
Nb-95	5.11E-04
Ni-59	1.33E-04
Ni-63	3.26E-04
Pa-231	3.56E+00
Ac-227	4.69E-04
Th-227	5.67E-06
Ra-223	8.96E-05
Rn-219	0.00E+00

Fr-223	2.22E-08
Pa-234m	1.26E-09
Pa-234	2.89E-05
U-234	0.00E+00
Th-230	0.00E+00
Ra-226	0.00E+00
Rn-222	0.00E+00
Pm-147	2.29E-04
Sm-147	0.00E+00
TOTAL	6.18E+00

## CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
Esophagu	5.18E-09
Stomach	1.33E-08
Colon	4.19E-08
Liver	9.61E-08
LUNG	3.93E-07
Bone	1.48E-07
Skin	3.39E-10
Breast	9.27E-09
Ovary	3.07E-08
Bladder	1.28E-08
Kidneys	1.11E-08
Thyroid	1.03E-09
Leukemia	3.23E-08
Residual	4.71E-08
Total	8.42E-07
 TOTAL	 1.68E-06

## PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.02E-07
INHALATION	7.29E-07
AIR IMMERSION	4.95E-11
GROUND SURFACE	1.06E-08
INTERNAL	8.31E-07
EXTERNAL	1.06E-08
 TOTAL	 8.42E-07

## NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
Am-241	2.48E-07
Np-237	1.59E-07
Pa-233	4.75E-10
U-233	3.90E-15
Th-229	0.00E+00
Ra-225	0.00E+00
Ac-225	0.00E+00
Fr-221	0.00E+00
At-217	0.00E+00
Bi-213	0.00E+00
Po-213	0.00E+00
Pb-209	0.00E+00
Tl-209	0.00E+00
C-14	2.54E-10
Ce-141	1.47E-10
Ce-144	1.91E-09
Pr-144m	1.47E-13
Pr-144	1.01E-12
Co-58	1.08E-09
Co-60	1.57E-08
Cr-51	1.08E-11
Cs-134	3.84E-08
Cs-137	3.07E-08
Ba-137m	6.53E-10
Eu-154	2.80E-09
Eu-155	2.70E-10
Fe-55	1.48E-10
Fe-59	6.94E-10
H-3	8.42E-12
Kr-85	1.12E-14
Mn-54	1.76E-09
Mo-93	8.31E-10
Nb-93m	5.46E-13
Nb-94	2.50E-09
Nb-95	3.05E-10
Ni-59	1.31E-10
Ni-63	3.24E-10
Pa-231	3.36E-07
Ac-227	7.78E-11
Th-227	5.61E-12
Ra-223	4.87E-11
Rn-219	0.00E+00

Fr-223	8.42E-15
Pa-234m	4.35E-16
Pa-234	1.82E-11
U-234	0.00E+00
Th-230	0.00E+00
Ra-226	0.00E+00
Rn-222	0.00E+00
Pm-147	1.73E-10
Sm-147	0.00E+00
TOTAL	8.42E-07

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)  
(All Radionuclides and Pathways)

---

Distance (m)

---

Direction 13900

---

N	1.9E+00
NNW	1.6E+00
NW	1.2E+00
WNW	1.2E+00
W	1.6E+00
WSW	2.9E+00
SW	8.0E+00
SSW	6.2E+00
S	2.5E+00
SSE	1.4E+00
SE	1.1E+00
ESE	1.1E+00
E	1.6E+00
ENE	3.3E+00
NE	4.7E+00
NNE	2.8E+00

---

INDIVIDUAL LIFETIME RISK (deaths)  
(All Radionuclides and Pathways)

---

Distance (m)

---

Direction 13900

---

N	2.6E-07
NNW	2.1E-07
NW	1.6E-07
WNW	1.6E-07
W	2.2E-07
WSW	4.0E-07
SW	1.1E-06
SSW	8.4E-07
S	3.4E-07
SSE	1.9E-07
SE	1.5E-07
ESE	1.5E-07
E	2.2E-07
ENE	4.6E-07
NE	6.5E-07
NNE	3.8E-07

---

C A P 8 8 - P C

Version 3.0

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment  
Nov 12, 2012 02:26 pm

Facility: INL  
Address: INTEC  
          Scoville  
City: Idaho Falls  
State: ID           Zip: 83415

Source Category: CPP-767  
Source Type: Stack  
Emission Year:

Comments: Lots 6-7 continued  
Pr-Y

Effective Dose Equivalent  
(mrem/year)

---

8.31E+00

---

At This Location: 13900 Meters South Southwest

Dataset Name: Lots 6-7 (Cont.)  
Dataset Date: 11/12/2012 2:07:00 PM  
Wind File: C:\Program Files\CAP88-PC30\Wndfiles\GRIU940

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 13900 Meters South Southwest  
Lifetime Fatal Cancer Risk: 1.91E-06

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
Adrenals	4.06E-02
B Surfac	1.30E+01
Breasts	3.53E-02
St Wall	1.03E-01
ULI Wall	1.08E-01
Kidneys	1.26E-01
Lungs	5.67E-01
Ovaries	1.67E-01
R Marrow	1.26E+00
Spleen	5.73E-02
Thymus	3.60E-02
Uterus	3.71E-02
Bld Wall	4.35E-02
Brain	3.50E-02
Esophagu	1.41E-01
SI Wall	4.58E-02
LLI Wall	2.67E-01
Liver	2.43E+00
Muscle	3.67E-02
Pancreas	4.18E-02
Skin	1.09E-01
Testes	1.68E-01
Thyroid	6.56E-02
EFFEC	8.31E+00

RADIONUCLIDE EMISSIONS DURING THE YEAR

Nuclide	Type	Size	Source	
			#1 Ci/y	TOTAL Ci/y
Pr-144	M	1	1.0E+00	1.0E+00
Pu-238	M	1	1.0E+00	1.0E+00
Pu-241	M	1	1.0E+00	1.0E+00
Pu-242	M	1	1.0E+00	1.0E+00
Po-210	M	1	1.0E+00	1.0E+00
Pu-239	M	1	1.0E+00	1.0E+00
Pu-240	M	1	1.0E+00	1.0E+00
Rb-83	M	1	1.0E+00	1.0E+00
Ru-106	M	1	1.0E+00	1.0E+00
Rh-106	M	1	1.0E+00	1.0E+00
Sb-124	M	1	1.0E+00	1.0E+00
Sb-125	M	1	1.0E+00	1.0E+00
Te-125m	M	1	2.5E-01	2.5E-01
Se-75	F	1	1.0E+00	1.0E+00
Sm-151	M	1	1.0E+00	1.0E+00
Sr-90	M	1	1.0E+00	1.0E+00
Y-90	M	1	1.0E+00	1.0E+00
Tc-99	M	1	1.0E+00	1.0E+00
Th-231	S	1	1.0E+00	1.0E+00
Th-234	S	1	1.0E+00	1.0E+00
U-233	M	1	1.0E+00	1.0E+00
U-234	M	1	1.0E+00	1.0E+00
U-235	M	1	1.0E+00	1.0E+00
U-236	M	1	1.0E+00	1.0E+00
U-238	M	1	1.0E+00	1.0E+00

SITE INFORMATION

Temperature: 6 degrees C  
 Precipitation: 19 cm/y  
 Humidity: 4 g/cu m  
 Mixing Height: 800 m

individual. User specified location of max exposed

(ILOC, JLOC): 8, 1

SOURCE INFORMATION

Source Number: 1  

---

Stack Height (m): 48.80  
Diameter (m): 1.65  
  
Plume Rise  
Buoyant (cal/s): 0.00  
(Heat Release Rate)

AGRICULTURAL DATA

	<u>Vegetable</u>	<u>Milk</u>	<u>Meat</u>
Fraction Home Produced:	1.000	1.000	1.000
Fraction From Assessment Area:	0.000	0.000	0.000
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.  
Default Values used.

DISTANCES (M) USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

13900

C A P 8 8 - P C

Version 3.0

Clean Air Act Assessment Package - 1988

S D O S E   A N D   R I S K   E Q U I V A L E N T   S U M M A R I E

Non-Radon Individual Assessment  
Nov 12, 2012 02:26 pm

Facility: INL  
Address: INTEC  
          Scoville  
City: Idaho Falls  
State: ID                   Zip: 83415

Source Category: CPP-767  
Source Type: Stack  
Emission Year:

Comments: Lots 6-7 continued  
Pr-Y

Dataset Name: Lots 6-7 (Cont.)  
Dataset Date: 11/12/2012 2:07:00 PM  
Wind File: C:\Program Files\CAP88-  
PC30\Wndfiles\GRIU9403.WND

## ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
Adrenals	4.06E-02
B Surfac	1.30E+01
Breasts	3.53E-02
St Wall	1.03E-01
ULI Wall	1.08E-01
Kidneys	1.26E-01
Lungs	5.67E-01
Ovaries	1.67E-01
R Marrow	1.26E+00
Spleen	5.73E-02
Thymus	3.60E-02
Uterus	3.71E-02
Bld Wall	4.35E-02
Brain	3.50E-02
Esophagu	1.41E-01
SI Wall	4.58E-02
LLI Wall	2.67E-01
Liver	2.43E+00
Muscle	3.67E-02
Pancreas	4.18E-02
Skin	1.09E-01
Testes	1.68E-01
Thyroid	6.56E-02
EFFEC	8.31E+00

## PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	3.62E-01
INHALATION	7.94E+00
AIR IMMERSION	2.41E-05
GROUND SURFACE	4.87E-03
INTERNAL	8.30E+00
EXTERNAL	4.90E-03
TOTAL	8.31E+00

## NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
Pr-144	7.39E-07
Pu-238	1.74E+00
U-234	1.38E-01
Th-230	8.88E-08
Ra-226	0.00E+00
Rn-222	0.00E+00
Po-218	0.00E+00
Pb-214	0.00E+00
Bi-214	0.00E+00
Po-214	0.00E+00
Pb-210	0.00E+00
At-218	0.00E+00
Pu-241	3.41E-02
Am-241	1.50E-05
Np-237	0.00E+00
Pa-233	0.00E+00
U-233	1.44E-01
Th-229	2.26E-06
Ra-225	3.97E-07
Ac-225	2.52E-08
Fr-221	1.30E-09
At-217	1.33E-11
U-237	6.61E-09
Pu-242	1.80E+00
U-238	1.14E-01
Th-234	5.59E-04
Pa-234m	2.40E-04
Pa-234	1.16E-05
Po-210	1.51E-01
Pu-239	1.89E+00
U-235	1.23E-01
Th-231	4.71E-05
Pa-231	6.15E-07
Ac-227	0.00E+00
Th-227	0.00E+00
Ra-223	0.00E+00
Rn-219	0.00E+00
Po-215	0.00E+00
Pb-211	0.00E+00
Bi-211	0.00E+00
Tl-207	0.00E+00
Po-211	0.00E+00

Fr-223	0.00E+00
Pu-240	1.90E+00
U-236	1.27E-01
Th-232	0.00E+00
Ra-228	0.00E+00
Ac-228	0.00E+00
Th-228	0.00E+00
Ra-224	0.00E+00
Rn-220	0.00E+00
Po-216	0.00E+00
Pb-212	0.00E+00
Rb-83	3.44E-03
Kr-83m	7.24E-12
Ru-106	3.00E-03
Rh-106	6.34E-04
Sb-124	1.93E-03
Sb-125	1.26E-03
Te-125m	1.94E-04
Se-75	4.78E-03
Sm-151	1.66E-04
Sr-90	1.08E-01
Y-90	2.98E-04
Tc-99	1.95E-02
TOTAL	8.31E+00

## CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk
Esophagu	3.64E-09
Stomach	1.36E-08
Colon	5.69E-08
Liver	4.49E-07
LUNG	1.10E-06
Bone	1.25E-07
Skin	3.35E-10
Breast	5.85E-09
Ovary	2.63E-08
Bladder	8.70E-09
Kidneys	9.57E-09
Thyroid	9.73E-10
Leukemia	7.41E-08
Residual	3.47E-08
Total	1.91E-06
TOTAL	3.83E-06

## PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.39E-07
INHALATION	1.77E-06
AIR IMMERSION	1.30E-11
GROUND SURFACE	2.33E-09
INTERNAL	1.91E-06
EXTERNAL	2.35E-09
TOTAL	1.91E-06

## NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
Pr-144	3.37E-13
Pu-238	3.03E-07
U-234	1.10E-07
Th-230	8.97E-15
Ra-226	0.00E+00
Rn-222	0.00E+00
Po-218	0.00E+00
Pb-214	0.00E+00
Bi-214	0.00E+00
Po-214	0.00E+00
Pb-210	0.00E+00
At-218	0.00E+00
Pu-241	2.92E-09
Am-241	1.89E-12
Np-237	0.00E+00
Pa-233	0.00E+00
U-233	1.15E-07
Th-229	2.59E-13
Ra-225	1.17E-13
Ac-225	2.71E-14
Fr-221	7.09E-16
At-217	7.31E-18
U-237	3.76E-15
Pu-242	2.81E-07
U-238	9.08E-08
Th-234	6.55E-10
Pa-234m	3.84E-11
Pa-234	6.34E-12
Po-210	1.14E-07
Pu-239	3.00E-07
U-235	9.82E-08
Th-231	2.77E-11
Pa-231	5.53E-14
Ac-227	0.00E+00
Th-227	0.00E+00
Ra-223	0.00E+00
Rn-219	0.00E+00
Po-215	0.00E+00
Pb-211	0.00E+00
Bi-211	0.00E+00
Tl-207	0.00E+00
Po-211	0.00E+00

Fr-223	0.00E+00
Pu-240	3.00E-07
U-236	1.02E-07
Th-232	0.00E+00
Ra-228	0.00E+00
Ac-228	0.00E+00
Th-228	0.00E+00
Ra-224	0.00E+00
Rn-220	0.00E+00
Po-216	0.00E+00
Pb-212	0.00E+00
Rb-83	2.45E-09
Kr-83m	2.68E-18
Ru-106	3.52E-09
Rh-106	2.32E-10
Sb-124	1.22E-09
Sb-125	8.15E-10
Te-125m	1.60E-10
Se-75	3.62E-09
Sm-151	6.96E-11
Sr-90	6.36E-08
Y-90	8.85E-11
Tc-99	1.87E-08
TOTAL	1.91E-06

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)  
(All Radionuclides and Pathways)

---

Distance (m)

---

Direction 13900

---

N	2.5E+00
NNW	2.1E+00
NW	1.6E+00
WNW	1.6E+00
W	2.2E+00
WSW	4.0E+00
SW	1.1E+01
SSW	8.3E+00
S	3.3E+00
SSE	1.8E+00
SE	1.5E+00
ESE	1.5E+00
E	2.2E+00
ENE	4.5E+00
NE	6.4E+00
NNE	3.7E+00

---

INDIVIDUAL LIFETIME RISK (deaths)  
(All Radionuclides and Pathways)

---

Distance (m)

---

Direction 13900

---

N	5.8E-07
NNW	4.9E-07
NW	3.7E-07
WNW	3.7E-07
W	5.0E-07
WSW	9.1E-07
SW	2.5E-06
SSW	1.9E-06
S	7.7E-07
SSE	4.2E-07
SE	3.4E-07
ESE	3.5E-07
E	5.0E-07
ENE	1.0E-06
NE	1.5E-06
NNE	8.6E-07

---

## **Appendix B**

### **Calculation of Potential Room Temperature Vulcanizing Silicone Emissions**



## Appendix B

### Calculation of Potential Room Temperature Vulcanizing Silicone Emissions

The waste inventory potentially contains RTV silicone sealants, and there is a small potential for chemical components of sealants to still be present; these chemical components would volatilize during the distillation process. Predistillation waste processing calls for removing as much combustible material, including RTV silicone, as possible from the wastes. To develop a conservative estimate of possible TAPs emissions from RTV silicone, the following assumptions were made:

- Only one drum of waste can be processed in a shift, i.e., in 24 hours (this is a process limitation due to time required to heat and cool waste)
- The total mass of waste in a shift is the maximum drum for Lots 6 and 7 (901 lb)
- All combustibles in distilled waste, or 0.1% of the waste mass, are RTV silicone<sup>c</sup>
- TAPs makeup (%) in RTV silicone are from Material Safety Data Sheets, and all volatile TAPs present at the time of manufacture are still present
- 100% of TAPs in the RTV silicone is volatilized and released.

Table B-1 presents estimated releases based on the above assumptions. No TAP release exceeds one one-thousandth of its respective Screening Emissions Level; therefore, no dispersion modeling of these TAPs is warranted.

Table B-1. Maximum possible emission rates of RTV silicone toxic air pollutants compared to Idaho Screening Emissions Levels.

CAS No.	TAP	% TAP in RTV <sup>a</sup>	Emission Rate (lb/hr) <sup>b</sup>	Screening Emissions Level (lb/hr)	Emission Rate as Fraction of Screening Emissions Level
100-41-4	Ethylbenzene	2	0.00075	29	0.00003
109-86-4	Methyl ether	3	0.0011	1.04	0.00108
1330-20-7	Xylene	7	0.0026	29	0.00009
64-19-7	Acetic acid	5	0.0019	1.67	0.00112
Total			0.006		

a. Percentages are from Material Safety Data Sheets for RTV silicone.

b. TAP emission rate (lb/hr) = (901 lb waste × 0.1% RTV × % TAP in RTV) ÷ 24 hr.

CAS Chemical Abstract Service  
 RTV room temperature vulcanizing  
 TAP toxic air pollutant

c. Combustibles in waste may include plastic bottles and other plastic, paper, or cloth wipes, and RTV silicone. Because all visible combustibles would be removed prior to distillation, and because combustibles are light weight compared to other waste components, primarily metals, the assumption that 0.1% (of total waste mass) combustibles would enter the distillation vessel is considered conservative. By illustration, 0.9 lb (0.1% × 901 lb waste) of silicone would be approximately 2 cups by volume, a volume highly unlikely to get through the waste sorting process.



**Appendix C**  
**Permit to Construct Application Forms**





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

Cover Sheet for Air Permit Application – Permit to Construct **Form CSPTC**

Please see instructions on page 2 before filling out the form.

COMPANY NAME, FACILITY NAME, AND FACILITY ID NUMBER			
1. Company Name	U. S. Department of Energy, Idaho Operations Office (DOE-ID)		
2. Facility Name	Idaho Nuclear Technology and Engineering Center.	3. Facility ID No.	011-00022
4. Brief Project Description - One sentence or less	Modify FDP Cell to install sodium distillation system to RH-TRU waste streams 6 and 7 at CPP-666		
PERMIT APPLICATION TYPE			
5	<input type="checkbox"/> New Source <input checked="" type="checkbox"/> New Source at Existing Facility <input type="checkbox"/> PTC for a Tier I Source Processed Pursuant to IDAPA 58 01.01 209 05 c <input type="checkbox"/> Unpermitted Existing Source <input type="checkbox"/> Facility Emissions Cap <input type="checkbox"/> Modify Existing Source: Permit No.: _____ Date Issued: _____ <input type="checkbox"/> Required by Enforcement Action: Case No.: _____		
6	<input checked="" type="checkbox"/> Minor PTC <input type="checkbox"/> Major PTC		
FORMS INCLUDED			
Included	N/A	Forms	DEQ Verify
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form CSPTC – Cover Sheet	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form GI – Facility Information	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form EU0 – Emissions Units General	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form EU1 – Industrial Engine Information    Please specify number of EU1s attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form EU2 – Nonmetallic Mineral Processing Plants    Please specify number of EU2s attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form EU3 – Spray Paint Booth Information    Please specify number of EU3s attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form EU4 – Cooling Tower Information    Please specify number of EU4s attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form EU5 – Boiler Information    Please specify number of EU4s attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form CBP – Concrete Batch Plant    Please specify number of CBPs attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form HMAP – Hot Mix Asphalt Plant    Please specify number of HMAPs attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	PERF – Portable Equipment Relocation Form	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form AO – Afterburner/Oxidizer	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form CA – Carbon Adsorber	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form CYS – Cyclone Separator	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form ESP – Electrostatic Precipitator	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form BCE – Baghouses Control Equipment	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form SCE – Scrubbers Control Equipment	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form VSCE – Venturi Scrubber Control Equipment	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form CAM – Compliance Assurance Monitoring	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Forms EI – Emissions Inventory	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	PP – Plot Plan	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Forms M11 – M14 – Modeling    (Excel workbook, all 4 worksheets)	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form FRA – Federal Regulation Applicability	<input type="checkbox"/>

Please see instructions on back page before filling out the form. All information is required. If information is missing, the application will not be processed.

Identification

1. Facility name: Idaho Nuclear Technology and Engineering Center, Sodium Distillation System  
2. Existing facility identification number: 011-00022  
 Check if new facility (not yet operating)  
3. Brief project description: Modify FDP Cell to install sodium distillation system to RH-TRU waste streams 6 and 7 at CPP-688.

Facility Information

4. Primary facility permitting contact name: Teresa L Perkins, Contact type: Owner, Telephone number: 208-528-1483, E-mail: perkintl@id.doe.gov  
5. Alternate facility permitting contact name: Tim Safford, Alternate contact type: Owner, Telephone number: 208-528-5670, E-mail: safford@id.doe.gov  
6. Mailing address where permit will be sent (street/city/county/state/zip code): U. S. Department of Energy-Idaho Operations Office, 1955 Fremont Avenue, Idaho Falls, ID 83415-1216  
7. Physical address of permitted facility (if different than mailing address) (street/city/county/state/zip code): Idaho Nuclear Technology and Engineering Center, Scoville, Butte, ID 83415  
8. Is the equipment portable?  Yes\*  No \*If yes, complete and attach PERF; see instructions.  
9. NAICS codes: Primary NAICS: 541710, Secondary NAICS:  
10. Brief business description and principal product produced: Waste Treatment and Storage  
11. Identify any adjacent or contiguous facility this company owns and/or operates: The Sodium Distillation Facility is located at Idaho Nuclear Technology and Engineering Center at the INL Site  
12. Specify type of application  Permit to construct (PTC); application fee of \$1,000 required. See instructions.  
 Tier I permit  Tier II permit  Tier II/Permit to construct  
For Tier I permitted facilities only: If you are applying for a PTC then you must also specify how the PTC will be incorporated into the Tier I permit.  
 Co-process Tier I modification and PTC  Incorporate PTC at the time of Tier I renewal  Administratively amend the Tier I permit to incorporate the PTC upon applicant's request (IDAPA 58.01.01.209.05 a, b, or c)

Certification

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(s) are true, accurate, and complete.

13. Responsible official's name: 1. Robert Boston, 2. Kevin Daniels, Official's title: 1. Manager, DOE-ID Operations Office, 2. Vice President, ESH&QA  
Official's address: 1. U. S. Department of Energy-Idaho Operations Office, 1955 Fremont Avenue, Idaho Falls, ID 83415-1203

2 CH2M-WG Idaho, LLC  
1580 Sawtooth St  
Idaho Falls, ID 83402

Telephone number 1 (208) 528-8632 2 (208) 533-3475

E-mail 1 bostonrd@id.doe.gov  
2 Kevin.Daniels@icp.doe.gov

Official's signature

Date

14. Check here to indicate that you want to review the draft permit before final issuance.



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

**AIR PERMIT APPLICATION**

Revision 6  
 10/7/09

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

IDENTIFICATION	
<p>1. Company Name:  U. S. Department of Energy Idaho Operations Office</p>	<p>2. Facility Name:  Idaho Nuclear Technology and Engineering Center, Sodium Distillation System</p>
<p>3. Brief Project Description:      Modify FDP Cell to install sodium distillation system to RH-TRU waste streams 6 and 7 at CPP-666.</p>	
APPLICABILITY DETERMINATION	
<p>4. List applicable subparts of the New Source Performance Standards (NSPS) (<a href="#">40 CFR part 60</a>).</p> <p>Examples of NSPS affected emissions units include internal combustion engines, boilers, turbines, etc. The applicant must thoroughly review the list of affected emissions units.</p>	<p>List of applicable subpart(s):</p> <p><input checked="" type="checkbox"/> Not Applicable</p>
<p>5. List applicable subpart(s) of the National Emission Standards for Hazardous Air Pollutants (NESHAP) found in <a href="#">40 CFR part 61</a> and <a href="#">40 CFR part 63</a>.</p> <p>Examples of affected emission units include solvent cleaning operations, industrial cooling towers, paint stripping and miscellaneous surface coating. <a href="#">EPA has a web page dedicated to NESHAP</a> that should be useful to applicants.</p>	<p>List of applicable subpart(s): 40 CFR 61, Subpart H</p> <p><input type="checkbox"/> Not Applicable</p>
<p>6. For each subpart identified above, conduct a complete a regulatory analysis using the instructions and referencing the example provided on the following pages.</p> <p><b>Note</b> - Regulatory reviews must be submitted with sufficient detail so that DEQ can verify applicability and document in legal terms why the regulation applies. Regulatory reviews that are submitted with insufficient detail will be determined incomplete.</p>	<p><input checked="" type="checkbox"/> A detailed regulatory review is provided (Follow instructions and example).</p> <p><input type="checkbox"/> DEQ has already been provided a detailed regulatory review. Give a reference to the document including the date.</p>
<p><b>IF YOU ARE UNSURE HOW TO ANSWER ANY OF THESE QUESTIONS, CALL THE AIR PERMIT HOTLINE AT 1-877-5PERMIT</b></p>	
<p><i>It is emphasized that it is the applicant's responsibility to satisfy all technical and regulatory requirements, and that DEQ will help the applicant understand what those requirements are prior to the application being submitted but that DEQ will not perform the required technical or regulatory analysis on the applicant's behalf.</i></p>	

**Appendix D**  
**Legal Notice of Public Meeting**

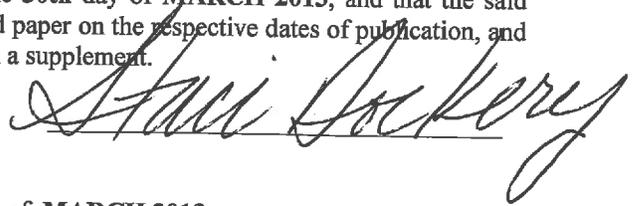


# Proof of Publication The Post Register

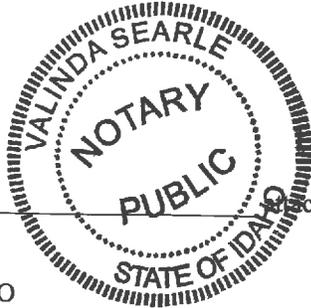
State of Idaho  
County of Bonneville

I, ~~Hilary Witt~~, or Staci Dockery first being duly sworn, depose and say: That I am the ~~Classified Manager~~, or Legal Notice Representative of The Post Company, a corporation of Idaho Falls, Bonneville County, Idaho, publishers of The Post Register, a newspaper of general circulation, published 6 days, Tuesday-Sunday, at Idaho Falls, Idaho; said Post Register being a consolidation of the Idaho Falls Times, established in the year 1890, The Idaho Register, established in the year 1880 and the Idaho Falls Post, established in 1903, such consolidation being made on the First day of November, 1931, and each of said newspapers have been published continuously and uninterruptedly, prior to consolidation, for more than twelve consecutive months and said Post Register having been published continuously and uninterruptedly from the date of such consolidation, up to and including the last publication of notice hereinafter referred to.

That the notice, of which a copy is hereto attached and made a part of this affidavit, was published in said Post Register for 1 consecutive (days) weeks, first publication having been made on the 30th day of MARCH 2013 last publication having been made on the 30th day of MARCH 2013, and that the said notice was published in the regular and entire issue of said paper on the respective dates of publication, and that such notice was published in the newspaper and not in a supplement.



Subscribed and sworn to before me, this 30th day of MARCH 2013



Valinda Searle  
Notary Public  
My commission expires: 11-10-2017

\_\_\_\_\_  
Subscribed jurat \_\_\_\_\_

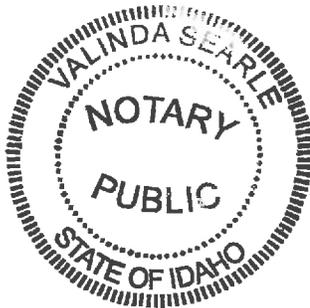
STATE OF IDAHO

ss.

COUNTY OF BONNEVILLE

On this 30th day of MARCH 2013, before me, the undersigned, a Notary public for said state, personally appeared ~~Hilary Witt~~ or Staci Dockery, known or identified to me to be the person(s) whose name(s) is/are subscribed to the within instrument, and being by me first duly sworn, declared that the statements therein are true, and acknowledged to me that he/she/they executed the same,

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.



Valinda Searle  
Notary Public for The Post Company  
Residing: Idaho Falls, Idaho  
Commission expires: 11-10-2017

**LEGAL NOTICE - Public Meeting  
Announcement  
Idaho National Laboratory Site  
Distillation of Sodium Contained In  
Remote-Handled, Transuranic Waste  
Air Pre-Permit Construction Approval**

Notice is hereby given that the U.S. Department of Energy, Idaho Operations Office and CH2M-WG Idaho, LLC will formally submit to the Idaho Department of Environmental Quality, on or about March 29, 2013, an application for an air Permit to Construct for distillation of elemental sodium contained in remote-handled (RH) transuranic (TRU) waste Lots 6 and 7 (29 containers total) at the Idaho Nuclear Technology and Engineering Center (INTEC) on the Idaho National Laboratory Site. Included with the Permit to Construct application will be a Request for Pre-Permit Construction approval to allow installation of the sodium distillation system (SDS) to begin prior to issuance of the final Permit to Construct. Pre-Permit Construction approval will assist the Department of Energy, Idaho Operations Office and CH2M-WG Idaho, LLC in complying with previously negotiated Idaho Settlement Agreement milestones and the *INL Site Treatment Plan*, namely, to ship stored TRU waste off the INL Site by a target date of December 31, 2015.

The SDS is designed to separate elemental, radioactive sodium from RH TRU wastes. Elemental sodium is reactive and ignitable, making the waste difficult to handle and treat. The SDS will be located in the existing FAST facility, building CPP-666 at INTEC on the Idaho National Laboratory Site. The Permit to Construct application is being submitted in accordance with the Idaho Administrative Procedures Act (IDAPA) 58.01.01.213.02, *Permit to Construct Procedures for Pre-Permit Construction*.

An informational meeting will be held in Meeting Room 1 at the Idaho Falls Public Library, 457 Broadway, Idaho Falls, Idaho, on April 9, 2013, convening at 6:30 p.m. and ending at 7:30 p.m., or ending at 7:00 p.m. if members of the public do not attend. The meeting is being held to describe the proposed permitted activity and answer questions. Individuals needing special access to participate in the meeting are encouraged to notify the point of contact listed in this notice at least 72 hours before the meeting.

Please direct comments and questions to Tim Safford, who is the Department of Energy, Idaho Operations Office point of contact for this meeting. He can be reached at (208) 526-5670, or at the following address:

Tim Safford  
Department of Energy Idaho Operations Office  
1955 Fremont Ave  
Idaho Falls, Idaho 83415-1216  
Published: March 30, 2013 (549269)