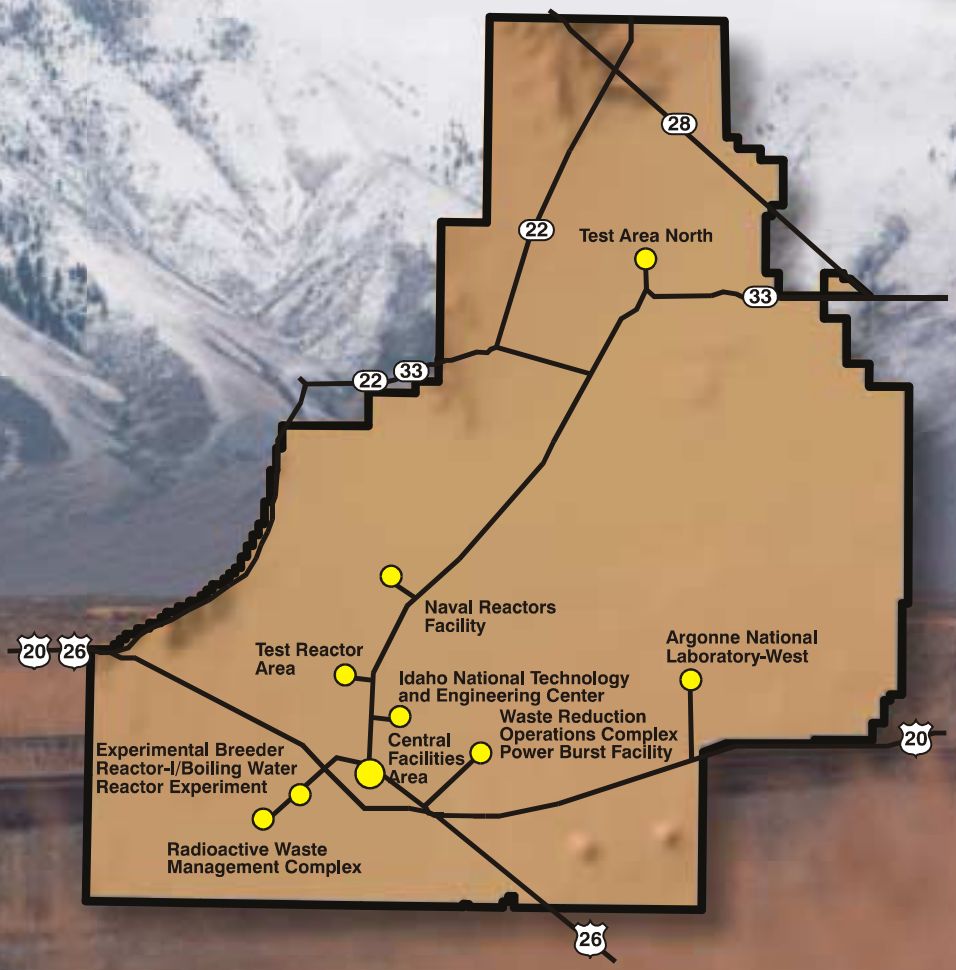
Idaho National Engineering and Environmental Laboratory

INEEL/EXT-2000-01610
March 2001

Application for a Title V Operating Permit for the Idaho National Engineering and Environmental Laboratory



Volume I Site-wide Standards and Information and Operating Permit Application Guide

INEEL
Home of Science and Engineering Solutions
Idaho National Engineering and Environmental Laboratory

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INEEL/EXT-2000-01610

Application for a Title V Operating Permit for the Idaho National Engineering and Environmental Laboratory

Volume I
Site-wide Standards and Information, and Operating Permit Application Guide

Published March 2001

Idaho National Engineering and Environmental Laboratory
Environmental Affairs
Bechtel BWXT Idaho, LLC
Idaho Falls, Idaho 83415

Prepared for the
U.S. Department of Energy
Under DOE Idaho Operations Office
Contract DE-AC07-99ID13727

FOREWORD

Volume I is one of a total set of ten volumes prepared for the Application for a Title V Operating Permit for the Idaho National Engineering and Environmental Laboratory.

The volumes making up the INEEL operating permit application are numbered as follows.

Volume I	Site-wide Standards and Information, and Operating Permit Application Guide
Volume II	Argonne National Laboratory-West
Volume III	Central Facilities Area
Volume IV	Idaho Nuclear Technology and Engineering Center
Volume V	Waste Reduction Operations Complex
Volume VI	Naval Reactors Facility
Volume VII	Test Area North
Volume VIII	Test Reactor Area
Volume IX	Radioactive Waste Management Complex
Volume X[a]	Radioactive Waste Management Complex, Advanced Mixed Waste Treatment Project, is forthcoming.

This February 2001 application is an updated revision of the July 1995 application (INEL-95/0155, Rev. 1) written to include, but not limited to:

- Changes to the Idaho Administrative Procedures Act Air Regulation;
- Updating the name of the Idaho Chemical Processing Plant to Idaho Nuclear Technology and Engineering Center (Volume IV);
- Cessation of various programs; and
- Addition of Volume X (which is forthcoming) that reflects BNFL, Inc. as the operator for the Advanced Mixed Waste Treatment Project at the Radioactive Waste Management Complex.

a. Anticipated completion FY 2002 by BNFL, Inc.

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ACRONYMS

AEC	Atomic Energy Commission
AFBC	atmospheric fluidized bed combustion
AMWTF	Advanced Mixed Waste Treatment Facility
ANL-W	Argonne National Laboratory-West
ANSI	American National Standards Institute
AST	above-ground storage tank
ATR	Advanced Test Reactor
BBWI	Bechtel BWXT Idaho, LLC
BORAX	Boiling Water Reactor Experiment
BRC	below regulatory concern
CAM	continuous air monitor
CEMS	continuous emission monitoring system
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFA	Central Facilities Area
CFR	Code of Federal Regulations
CSSF	Calcined Solids Storage Facility
CGS	Calcine Grinder Setup
COMS	continuous opacity monitoring system
CPP	Chemical Processing Plant (now known as INTEC)
CTF	Contained Test Facility (formerly LOFT)
DEQ	Department of Environmental Quality
DOE	Department of Energy
DOE-ID	Department of Energy-Idaho Operations Office
DOG	dissolver off-gas
DOP	dioctyl phthalate
DOT	Department of Transportation
DU	depleted uranium
DVF	Drum Venting Facility
ECF	Expended Core Facility
EDE	effective dose equivalent
EIS	environmental impact statement
EPA	Environmental Protection Agency
ETR	Engineering Test Reactor
FAA	Federal Aviation Administration
FDP	Fluorinel Dissolution Process
FSA	Fuel Storage Area
HAP	hazardous air pollutant
HEPA	high-efficiency particulate air
HFEF	Hot Fuel Examination Facility (located at ANL-W)

HLLWE	high level liquid waste evaporator
HQ	headquarters
HVAC	heating, ventilation, and air conditioning
ICPP	Idaho Chemical Processing Plant (now known as INTEC)
IDAPA	Idaho Administrative Procedures Act
IET	Initial Engine Test
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
JP-4	jet propulsion 4
JP-8	jet propulsion 8
LET&D	Liquid Effluent Treatment and Disposal (Facility)
LLW	low-level radioactive waste
LOFT	Loss-of-fluid Test
M&O	management and operations
MCR	maximum continuous rating
MDF	Material Development Facility
MTR	Materials Test Reactor
MWSF	Mixed Waste Storage Facility
NA	not applicable
NESHAP	National Emission Standards for Hazardous Air Pollutants
NRF	Naval Reactors Facility
NWCF	New Waste Calcining Facility
OCM	organic composite material
PBF	Power Burst Facility
PCS	petroleum-contaminated soil
PEW	process equipment waste
PM	particulate matter
PM-10	particulate matter with a diameter less than 10μ
PREPP	Process Experimental Pilot Plant
PRF	Process Reclamation Facility
PSD	prevention of significant deterioration
PTC	permit to construct
RAL	Remote Analytical Laboratory
RAM	remote area monitor
RCRA	Resource Conservation and Recovery Act
RCT	radiation control technician
RDF	refuse-derived fuel
RE	Retrieval Enclosure
RESL	Radiological Environmental Sciences Laboratory
RFP	Rocky Flats Plant
RWMC	Radioactive Waste Management Complex
SAL	Special Analysis Laboratory

SDA	Subsurface Disposal Area
SES	Special Equipment Services
SMC	Specific Manufacturing Capability (Facility)
SPING	stack particulate, iodine, and noble gas
SRT	special response team
SWEPP	Stored Waste Examination Pilot Plant
TAN	Test Area North
TMI-2	Three Mile Island Unit 2
TRA	Test Reactor Area
TRAHC	Test Reactor Area Hot Cell
TRU	transuranic
TSA	Transuranic Storage Area
TSF	Technical Support Facility
TSP	total suspended particulates
U.S.C.	United States Code
UST	underground storage tanks
UTM	Universal Transverse Mercator
VMT	vehicle miles traveled
VOC	volatile organic compound
VOCNM	Volatile organic compound-non methane
VOG	vessel off-gas
WCF	Waste Calcining Facility
WERF	Waste Experimental Reduction Facility
WIPP	Waste Isolation Pilot Plant
WMF	Waste Management Facility
WROC	Waste Reduction Operations Complex
WRRTF	Water Reactor Research Test Facility
WSF	Waste Storage Facility
WWTF	Warm Waste Treatment Facilities

SYMBOLS AND ABBREVIATIONS

α	alpha
β	beta
β/γ	beta/gamma
Btu	British thermal unit
Ci	curie
Ci/mo	curie per month
Ci/yr	curie per year
Cm^2	square centemeters
CO	carbon monoxide
g	gram
gr	grain
hp	horse power
lb	pound
μm	micrometers (10^{-6} meters)
MBtu	million British thermal unit
mrem	thousandth of a roentgen equivalent man
mrem/yr	millirem per year
NO_x	nitrogen oxide
SO_x	sulfurous oxide
v/v	volume per volume
w.c.	water column

1. APPLICATION METHODOLOGY

The Idaho National Engineering and Environmental Laboratory (INEEL) covers approximately 890 square miles and is physically separated into eight distinct operational areas (i.e., group of related buildings and operations). As designated by the State of Idaho and the Department of Energy Idaho Operations Office (DOE-ID), the INEEL is regarded as one contiguous facility for the purposes of state and federal operating permit rules.

Aspects of the INEEL Title V operating permit application methodology have been discussed with the State of Idaho throughout the development of the state operating permit program and INEEL operating permit application. These discussions have molded the INEEL operating permit application program. The federal operating permit rules [40 Code of Federal Regulations (CFR) 70] allow for the flexibility to develop facility-specific application strategies to better serve the regulating state, public concerns, and industry.

Early in the development of the INEEL operating permit application, the State of Idaho and DOE-ID anticipated the complexity and content of the INEEL application based on facility volume and operations. Through an intercontractor effort, the INEEL developed a strategy to reduce the size of the INEEL application by organizing it in ten volumes (general information and nine distinct contractor areas). This volume, Volume I, contains general information concerning the application. The area-specific volumes contain information specific to each distinct contractor operational area.

The volumes making up the INEEL operating permit application are numbered as follows:

Volume I	Site-wide Standards and Information, and Operating Permit Application Guide
Volume II	Argonne National Laboratory-West
Volume III	Central Facilities Area
Volume IV	Idaho Nuclear Technology and Engineering Center
Volume V	Waste Reduction Operations Complex
Volume VI	Naval Reactors Facility
Volume VII	Test Area North
Volume VIII	Test Reactor Area
Volume IX	Radioactive Waste Management Complex
Volume X	Radioactive Waste Management Complex (Advanced Mixed Waste Treatment Project)

These volumes set forth the INEEL requirements and compliance status. Compliance certification (method of compliance) forms are in Volume I and in the area-specific volumes for each regulatory or permit requirement applicable to INEEL operations or emission units. These forms reflect only current requirements. They do not reflect requirements mandated by Title V operating permit rules such as compliance certification reporting. Title V requirements that will result from issuance of the INEEL Title V operating permit from the State of Idaho, such as the compliance certification reporting, will be incorporated into current compliance certification forms after issuance of the permit.

1.1 Volume I Organization

Volume I provides information common to all INEEL operational areas and presents an overview of INEEL historic and current operations. Volume I includes discussion of general permitting issues, permit administration general conditions, INEEL regulatory requirements, and standardized compliance strategies where applicable.

A general description of INEEL activities, operations, site organization, and administration is in Section 2 of this volume. This section includes specific information concerning owners and operators of affected operational areas as required under Idaho Administrative Procedures Act (IDAPA) 58.01.01.314.02. General information and conditions concerning the INEEL operating permit application are in Section 3 of this volume. Section 3 includes information concerning permit duration and proposed renewal schedules, a permit shield request, an exemption request, proposed permit modification procedures, and other permitting issues. In addition, a detailed discussion of sources considered exempt insignificant sources and not-significant sources are in Section 3 of this volume. Regulatory requirements applicable to INEEL sources and INEEL permit requirements are summarized in Section 4 of this volume.

The INEEL has sources that are universally subject to a limited number of specific regulatory requirements, such as visible emissions and particulate monitoring. The INEEL also possesses sources such as fuel-burning equipment, storage vessels, and radionuclide emissions that are each subject to specific state and/or federal regulations. These sources occur at many of the INEEL areas discussed in this application and are managed under standardized INEEL compliance programs. Standardized compliance programs are discussed in Section 5 of this volume to eliminate redundancy in the area-specific volumes. Information is referenced in the area-specific volumes. Section 5 includes descriptions of the source types, regulatory requirements, compliance methodologies, and emission calculation methods. Individual sources that may deviate from standardized information discussed in Section 5 are identified in the area-specific volumes.

The INEEL is also subject to regulations that are not applied to specific stationary emissions sources. Examples of these include asbestos removal, demolition, and packaging requirements; accidental release requirements; and open burning regulations. Rather than being implemented on a source basis, the intent is to implement these regulations through programs to ensure compliance. The INEEL also has prevention of significant deterioration (PSD) permits that require programs to manage and track increments to ensure compliance with permit limitations. These programs are described in Section 6.

Although not required by many source-specific regulations, the type and quantity of emissions from significant sources are required in the Tier I operating permit application (IDAPA 58.01.01.314.04). This Section requires that INEEL "…identify and describe all emissions for which the source is major and all emissions of regulated air pollutants from each emission unit." The INEEL is a major source for NOx, SO_2, and particulate emissions. Information on regulated emissions from individual units are provided in the nine area volumes. Regulated emissions do not include state toxic air pollutants unless there are specified limits in a permit to construct (PTC). The IDAPA 58.01.01.585 and 586 toxic regulations are not federally enforceable. Particulate matter is not listed for the non-gaseous radionuclide emission unless there is a non-radionuclide component to the emission. Calculation methodologies used to determine the quantity of emissions, as required under IDAPA 58.01.01.314.04(b), are described in the area-specific volumes and as appendices to Volume I. The Volume I appendices include the following:

Appendix A—Organic Tank Emissions Calculations Methodology
Appendix B—Fuel-Burning Engines Emissions Calculation Methodology
Appendix C—Boilers, Heaters, and Furnaces Emissions Calculation Methodology
Appendix D—Painting Emissions Calculation Methodology
Appendix E—Radionuclide Emissions Calculation Methodology
Appendix F—Fugitive Dust Emissions

1.2 Organization of Area-Specific Volumes

Each area-specific volume provides information that corresponds to a geographically distinct operational area [e.g., Test Area North (TAN), Central Facilities Area (CFA), etc.] at the INEEL. Each of the nine volumes contains source-specific information including state operating permit application forms, applicable requirements, compliance methodology and status, emissions, permit limitations for each permitted source, and other information in accordance with IDAPA 58.01.01.300 et seq. (Figure I-1-1). As shown in the outline at the end of this section, the area-specific volumes have been organized in a consistent format for ease of interpretation. General information concerning the facility operations; location and area plot plans showing roads, building locations, and designations; and a list of significant facility emission sources are in Section 1 of each volume. Source-specific information is in Section 2 of each area-specific volume. Based on the complexity of the operational areas and the number of sources, Section 2 is divided into subsections that correspond to buildings. Each affected building, the processes it supports, and its sources are described. For each building, plot plans that include a north arrow, building designation numbers, location, and plan scale are included. Building locations include Universal Transverse Mercator (UTM) coordinates. Significant sources have been located on each plot plan. Source locations identified on the state operating permit application forms reference the building UTM coordinates. Area topography is discussed in Section 2 of Volume I.

Each source-specific subsection includes State of Idaho operating permit application forms and relevant information necessary to evaluate the source, its emissions, and compliance requirements and status as described in the following subsections.

1.2.1 State Operating Permit Application Forms-IDAPA 58.01.01.314.01(a)

In accordance with IDAPA 58.01.01.314.01(a), the INEEL has completed State of Idaho application forms provided by the Idaho Department of Environmental Quality (DEQ). INEEL Tier I sources are not subject to regulation under 42 U.S.C. Sections 7651 through 7651o (i.e., acid rain program). Therefore, Environmental Protection Agency (EPA) standardized forms are not used for these sources. State of Idaho operating permit application forms are included in each source-specific section. Where specific equipment make and model are described, equivalent equipment may be used; also, when a specific temperature or value is given, it represents an approximate number.

It is assumed that the State of Idaho wants building dimensions for modeling building downwash. When modeling the INEEL emissions, building downwash is not a concern because building downwash effects are seen only up to 4 building lengths away from the source and the INEEL receptors are 4 miles away at a minimum. Therefore, building dimensions, when not readily available, are not included on the forms.

Based on the diversity of source types at the INEEL subject to a common application form, the forms do not always correspond directly with the type of emission source. Therefore, Form 3, Process and Manufacturer Operations, was used as a default form. In these instances, much of the information requested does not apply, so many forms have numerous not applicable (NA) inserts. The forms have been modified in certain instances to better reflect INEEL operations. Descriptions of data that did not correspond to the form requests are discussed, where applicable, in the area-specific volumes. Fuel data are not provided if the information is not needed for calculations.

AREA-SPECIFIC VOLUME ORGANIZATION

1. AREA-SPECIFIC INFORMATION

1.1 Facility Description

1.2 Facility Air Emissions Source Listing

1.3 Not-significant Radiological Emission Source(s) Description

2. SOURCE-SPECIFIC INFORMATION

2.1 (Building Name)

2.1.1 General Description

2.1.2 (Emission Source Name) Specific Information

2.1.2.1 Process Description
2.1.2.2 Maximum Regulated Pollutant Emissions
2.1.2.3 Compliance Requirements

2.1.2.3.1 Permitted Emission Limits
2.1.2.3.2 Existing Permit Requirements
2.1.2.3.3 Other Enforceable Requirements
2.1.2.3.4 Request for Permit Changes/Exemptions/Nonapplicabilities

2.1.2.4 Compliance Certification and Status

2.1.2.4.1 Compliance Plan
2.1.2.4.2 Compliance Certification Forms

2.1.2.5 Emission Calculations

2.1.2.5.1 Nonradionuclide Emissions
2.1.2.5.2 Radionuclide Emissions

Figure I-1-1. Outline of area-specific volumes.

1.2.2 Process Descriptions—IDAPA 58.01.01.314.02 (b), Emission Control and Monitoring Equipment—IDAPA 58.01.01.314.04(e)

Process descriptions for emission sources are provided, including (1) process equipment identification, (2) chemicals, raw materials, and fuels, and (3) identification of multiple processes that use common stacks or vents, as appropriate. Process descriptions typically are supported by process flow diagrams for each significant source. Flow diagrams include process flow and locations of material transfer (as applicable), emissions control equipment, and adequate labeling to support the process description. Process flow rates, as needed to support calculations, are provided on the state application forms. Processes at the INEEL are predominantly simple operations, such as boilers and storage tank operations, resulting in many simple process descriptions. Emission control equipment and emission monitoring equipment are discussed for each source. If control or monitoring equipment is not required, it is so noted.

1.2.3 Regulated Emissions—IDAPA 58.01.01.314.04(a)

Regulated emissions are listed for each source. Nonradionuclide emissions are on the maximum regulated pollutant emission list in the area-specific volumes (calculated maximum emissions). The INEEL is willing to accept these maximum emissions as Title V operating permit limits in order to facilitate future emissions trading.

1.2.4 Compliance Requirements—IDAPA 58.01.01.314.06

Compliance requirements are described for each significant source. Each source subsection discusses applicable requirements including permit emission limits, regulatory requirements, and other enforceable requirements.

1.2.5 Compliance Methodology and Status—IDAPA 58.01.01.314.09 and .10

Compliance methodologies are described for each source, including a compliance plan (IDAPA 58.01.01.314.10), compliance certification forms and the methods for determining compliance, and a statement concerning the compliance status (IDAPA 58.01.01.314.9). Compliance certification forms are provided only if demonstration of compliance was required from the date of the application forward, and not for requirements that have already been satisfied (e.g., performance tests, submittal of operation and maintenance manuals).

1.2.6 Emission Calculations—IDAPA 58.01.01.314.04(b)

Where applicable, emissions calculation methodologies in the appendices to Volume I are referenced in the area-specific volumes to support the compliance status or the emission information required to satisfy Tier I operating permit inventories (IDAPA 58.01.01.314.04(b)). Deviations from calculation methodologies in the Volume I appendices, if any, are noted in the area-specific volumes. Nonradionuclide and radionuclide emission calculations are discussed separately.

2. INEEL MISSION

2.1 INEEL General Site Description

The INEEL Site occupies about 2,300 square kilometers (890 square miles) of dry, cool desert in southeastern Idaho (Figure I-2-1). It is located in the eastern Snake River Plain, west of the Snake River, and near numerous national forests and recreational areas. Population centers near the Site are Idaho Falls to the east, Blackfoot to the southeast, Pocatello to the south-southeast, and Arco to the west. The INEEL is bordered by a number of private and public lands, including cultivated and noncultivated private lands and public grazing lands (Figure I-2-1). Portions of the INEEL Site are under grazing permits.

2.2 INEEL Organization and Administration

The INEEL is a government-owned Site managed by DOE and administered by three DOE Operations Offices: the Idaho Operations Office, Idaho Branch Office of Pittsburgh Naval Reactors, and Argonne Area Office-West/Chicago Operations Office.

Most Site operations are consolidated into one major contract with one managing and operating contractor, Bechtel BWXT Idaho, LLC (BBWI). The contractor is responsible for managing and operating the facilities associated with the Idaho Nuclear Technology and Engineering Center (INTEC), Test Area North (TAN), Test Reactor Area (TRA), CFA, Radioactive Waste Management Complex (RWMC), and the Waste Reduction Operations Complex (WROC).

Bechtel Bettis, Inc. supports the Idaho Branch Office of Pittsburgh Naval Reactors by operating the Naval Reactors Facility (NRF). The University of Chicago continues to support the DOE Chicago Operations Office by operating ANL-W. BNFL, Inc. operates the Radioactive Waste Management Complex (Advanced Mixed Waste Treatment Project) at the RWMC.

2.2.1 General Information—IDAPA 58.01.01.314.02

The Tier I source facility is located at the INEEL

Although regarded as one Site, The INEEL is operated under three DOE operations offices. Based on these jurisdictions, general information required under IDAPA 58.01.01.314.02 is provided in the following sections below.

Idaho National Engineering and Environmental Laboratory

Facilities:	Central Facilities Area Idaho Nuclear Technology and Engineering Center Waste Reduction Operations Complex Test Area North Test Reactor Area Radioactive Waste Management Complex (Except Advanced Mixed Waste Treatment Project)
Owner:	U.S. Department of Energy
Responsible Official:	B. A. Cook, Manager

Address:	Department of Energy Idaho Operations Office 850 Energy Drive, Idaho Falls, Idaho 83401-1562
Phone Number:	(208) 526-5665
Operator:	Bechtel BWXT Idaho, LLC
Responsible Official:	B. L. Meyer

Argonne National Laboratory-West

Facilities:	Argonne National Laboratory-West
Owner:	U.S. Department of Energy
Responsible Official:	M. M. Holzmer, Team Leader, DOE Argonne Area Office West
Address:	Department of Energy Argonne Area Office-West/Chicago Operations Office P.O. Box 2528, Idaho Falls, Idaho 83403
Phone Number:	(208) 533-7446
Operator:	University of Chicago

Naval Reactors Facility

Facilities:	Naval Reactors Facility
Owner:	Idaho Branch Office of Pittsburgh Naval Reactors
Responsible Official:	T. M. Bradley, Jr., Manager
Address:	Naval Reactors Idaho Branch Office, DOE P.O. Box 2469, Idaho Falls, Idaho 83403-2469
Phone Number:	(208) 533-5057
Operator:	Bechtel Bettis, Inc.

Idaho National Engineering and Environmental Laboratory

Facilities:	Advanced Mixed Waste Treatment Project at RWMC
Owner:	U.S. Department of Energy
Responsible Official:	B. A. Cook, Manager
Address:	Department of Energy Idaho Operations Office 850 Energy Drive, Idaho Falls, Idaho 83401-1562
Phone Number:	(208) 526-5665
Operator:	BNFL, Inc.
Responsible Official:	F. P. Hughes

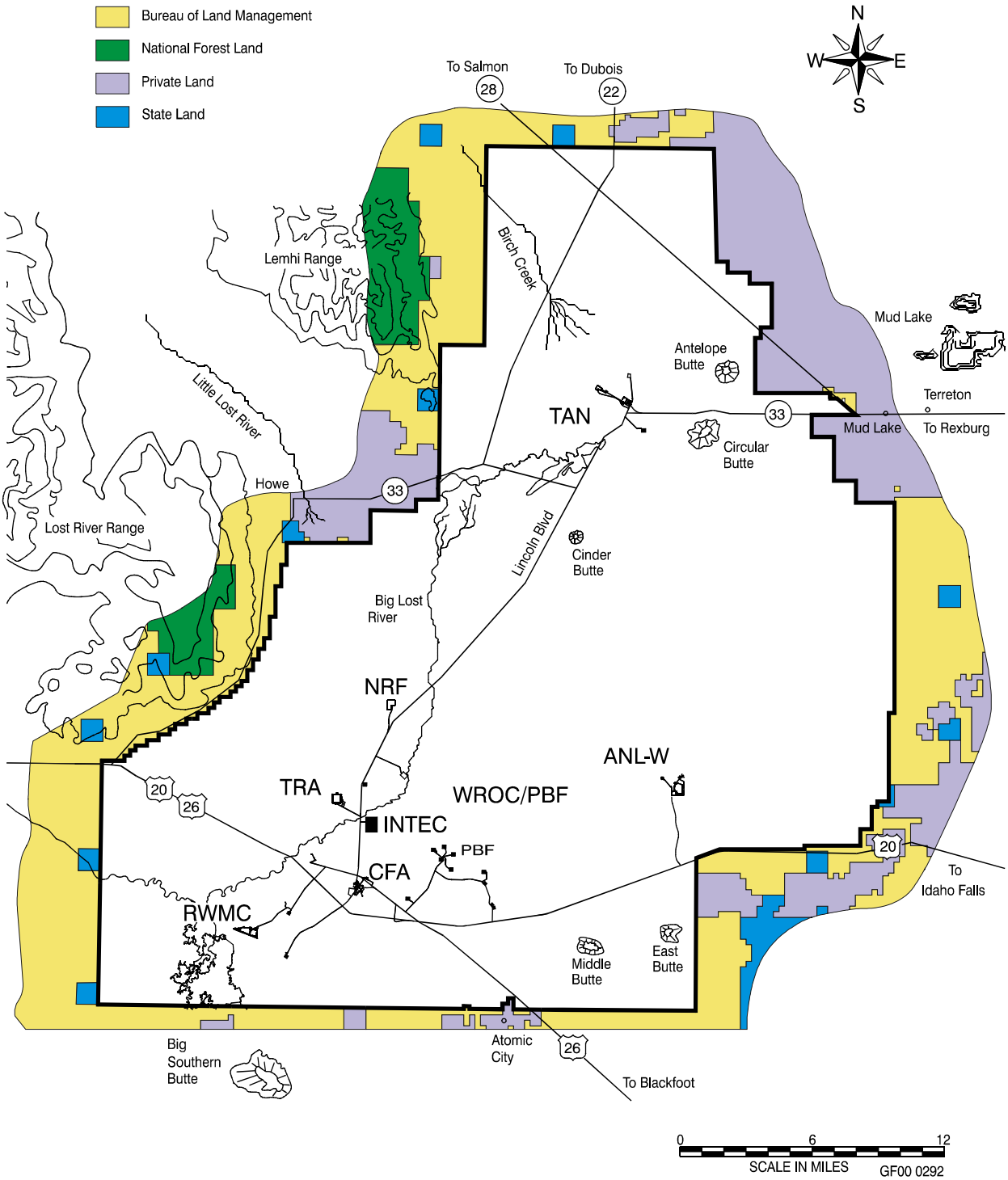

Figure I-2-1. Adjacent land ownership.

2.3 Historical Mission

The INEEL has long provided research and engineering support to military, commercial, and government segments of the U.S. economy. Specific activities at the INEEL have shifted over time to meet changing national needs. These shifts included changing from the application of nuclear power for commercial and U.S. Naval uses to spent nuclear fuel reprocessing and waste storage. The INEEL currently emphasizes the development of science and technology related to (1) advancing and improving remediation and waste management at the INEEL, and (2) applying the knowledge gained from the INEEL experience to other national needs.

One result of the activities conducted to meet the historical missions of the INEEL is the creation of eight major facility areas. These areas and their transportation corridors encompass most industrial development, disturbances, and contamination (with the exception of groundwater) on the INEEL Site, but compose only 2% of the total land area of the Site.

2.3.1 History of INEEL Mission Activities

During World War II, the U.S. Navy and U.S. Army Air Corps used a portion of the present Site as a gunnery range. In 1949, the Site was formally established as the National Reactor Testing Station. Over time, 52 different reactors, most of them first-of-a-kind facilities, were built. Most of these reactors were phased out or dismantled after their research missions were completed. Early programs included the Experimental Breeder Reactor-I, now a national historic landmark, which produced the first usable electrical power from nuclear energy in 1951; and the Boiling Water Reactor Experiment-III, which in 1955 was the first reactor to light an American town (Arco, Idaho).

The principal operating facility at the Naval Reactors Facility (NRF) is the Expended Core Facility (ECF). ECF is a large laboratory designed to receive, handle, and test naval reactor fuel modules and engineering test specimens. Three naval nuclear prototypes (S1W, A1W, and S5G) concluded operation in October 1989, January 1994, and May 1995, respectively. When operating, the prototypes were used to test advanced naval reactors components and to train United States Navy personnel for service aboard nuclear-powered ships.

Another effort supporting U.S. nuclear programs was reprocessing spent nuclear fuel to recover uranium at the Idaho Nuclear Technology and Engineering Center. Reprocessing began in 1953 and phased out by DOE in April 1992.

Between 1954 and 1989, defense-related nuclear waste was shipped to the INEEL Site, primarily from the Rocky Flats Plant in Colorado. Until 1970, this waste, which was mostly transuranic, was buried in shallow pits and trenches at the RWMC. After 1970, transuranic waste was stored aboveground in interim storage facilities.

Since the mid-1970s, one of the specific purposes of the INEEL has been to advance science and technology related to environmental characterization and restoration of sites contaminated by earlier operations. In 1975 the INEEL was designated as a National Environmental Research Park, one of seven in the nation. These parks were established by DOE to provide protected land areas for research and education in the environmental sciences, and to demonstrate the compatibility of energy technology development and use with environmental quality. The INEEL Site provides an outdoor laboratory where scientists can study changes in the natural environment caused by human activities. DOE has continued to emphasize the mission of developing restoration and waste management technologies, and to implement cleanup activities.

2.4 INEEL Current Mission

The Site today continues to tackle complex missions for the nation in a safe and cost-effective manner. Among these are:

- Delivering science-based, engineered solutions to challenges in the Department of Energy's mission areas
- Completing environmental cleanup of the Site responsibly
- Providing leadership and support to optimize the value of DOE's Environmental Management investments and the INEEL's strategic partnerships
- And enhancing the INEEL's scientific and technical talent, facilities, and equipment to best serve the nation and the Northwest region.

The INEEL is also a National Environmental Research Park, one of only seven in the nation. All lands within its boundaries are a protected outdoor laboratory where scientists conduct ecological studies. The vision for the INEEL is to be an enduring national resource that delivers science and engineered solutions to the world's environmental, energy and security challenges. The lab also focuses on technology research and development, environmental research, applied engineering and systems integration, and the transfer and commercialization of energy and environmental technologies.

3. INEEL PERMIT ADMINISTRATION AND GENERAL CONDITIONS

3.1 Operational Flexibility

INEEL source types are diverse, ranging from not-significant sources such as propane space heaters to permitted steam generation plants or radionuclide emission sources subject to federal and state regulations.

INEEL sources have variable emissions based on factors including annual and seasonal temperature variations, changing operational demands, and Site cleanup activities. The INEEL strategy to maintain operational flexibility at the INEEL is to provide process descriptions and emissions in the area-specific volumes that reflect and accommodate variable operating schedules and capacities. The INEEL currently does not use alternative operating scenarios for operational flexibility. However, this does not preclude the INEEL from utilizing alternative operating scenarios in future applications and permit modifications.

3.2 Application Shield—40 CFR 70.7(b)

The INEEL requests a Tier I operating permit application shield. The 1995 submittal was deemed complete on December 22, 1995, which activated the application shield provided under 40 CFR 70.7(b). The application shield applies to the federal program and to the state program. The state deemed that the 1995 application was timely and complete, this means enforcement action cannot be taken against the INEEL for operating without an operating permit until the agency makes a final determination on the application. This 2001 application will be evaluated by the state for completeness.

3.3 Permit Shield Request—IDAPA 58.01.01.325

The INEEL formally requests the incorporation of a permit shield into the INEEL operating permit. Applicable and nonapplicable regulations to INEEL operations and facilities are discussed in Section 4, INEEL General Requirements, in accordance with IDAPA 58.01.01.325.01(a) & (b) and form the basis for the permit shield.

The permit shield provides that compliance with the terms and conditions of the operating permit shall be deemed compliant with applicable requirements as of the date of permit issuance. These requirements will be specifically identified and will have a corresponding term or condition in the operating permit. The permit shield will identify applicable and nonapplicable requirements. As long as the INEEL operates in compliance with the permit, the INEEL is in compliance with the state and federal air regulations.

The INEEL recognizes that modifications or alterations to the operating permit may affect the permit shield. To avoid the potential of an ineffective permit shield, permit modification submittals will generally include a permit shield request. Per IDAPA 58.01.01.381-386, modifications or alterations to the operating permit may or may not include a permit shield depending on the nature of the modification or alteration.

3.3.1 Nonapplicability Review Requests—IDAPA 58.01.01.314.07

The State of Idaho regulations (IDAPA 58.01.01.314.07) provide the opportunity for nonapplicable requirements to be given a formal determination of nonapplicability by the DEQ. The INEEL is

requesting that the DEQ make a determination of nonapplicability for 40 CFR 61 Subpart Q,-National Emission Standards for Radon Emissions from Department of Energy Facilities.

Nonapplicable Requirements

40 CFR 61 Subpart Q—National Emission Standards for Radon Emissions from Department of Energy Facilities

The provisions of this subpart apply to the design and operation of all storage and disposal facilities for radium-containing material [i.e., byproduct material as defined under section 11.e(2) of the Atomic Energy Act of 1954 [(as amended) that are owned or operated by the DOE, that emit radon-222 into air (§61.190)]. 40 CFR 61.191 defines a "source" as "any building, structure, pile, impoundment or area used for the interim storage or disposal that is or contains waste material containing radium in sufficient concentration to emit radon-222 in excess of this standard prior to remedial action." The preamble to 40 CFR 61 Subpart Q (54 FR 51673) discusses the application of Subpart Q to DOE facilities. As clarified under "Radon Releases from Department of Energy Facilities," the standard applies to facilities with "large stockpiles of radium-containing material." The INEEL storage of radium does not meet the definition of a "large stockpile" per the regulation. The INEEL has previously identified this nonapplicability in the 1993 National Emission Standards for Hazardous Air Pollutants (NESHAP) Annual Report to EPA and is requesting a nonapplicability determination from the State of Idaho.

3.4 Temporary Sources

On an ongoing basis, the INEEL conducts short-term projects that often generate "temporary" emissions. Characterized as less than one year in duration, temporary sources usually satisfy the requirements for PTC exemptions of IDAPA 58.01.01.220 through 225 (although a below regulatory concern determination or PTC is sometimes required and subsequently obtained). These sources are not included in the operating permit application and will not be included in permit renewals or modifications, since (by nature of being a temporary source) operations would be complete by (or shortly after) the issuance or renewal of the operating permit. During their operation, all temporary sources will comply with the conditions of any applicable PTCs and applicable local, state, and federal regulations. In instances where temporary activities are anticipated for periods greater than one year, the INEEL will seek case-by-case determinations from the State of Idaho.

3.5 CERCLA Activities

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) activities at the INEEL are currently conducted under State of Idaho administrative controls. As set forth in CERCLA regulations, no federal, state, or local permits are required for any portion of a CERCLA remedial action conducted on the Site being cleaned up. CERCLA does require that the remedial activities meet the substantive requirements of the applicable or relevant and appropriate requirements. It is the INEEL Environmental Restoration Project's policy to provide adequate documentation to demonstrate that the substantive requirements are met. Managers responsible for CERCLA activities releasing radionuclides are required to submit their project's contribution to the annual Site dose for incorporation into the annual radiological NESHAP report.

As the State of Idaho is an active participant in all INEEL CERCLA activities, and CERCLA regulations specifically state that these activities are exempt from obtaining a permit, CERCLA activities at the INEEL are considered exempt from the Title V administrative permitting process.

3.6 Noncompliance

If an emission unit or source is not in compliance with any portion of the INEEL operating permit upon issuance, enforcement actions will be applicable only to the emissions unit or source that is not in compliance. Other emissions units or sources may continue to operate in accordance with the operating permit.

3.7 Tier I Operating Permit Duration, Renewal, and Authorization

State of Idaho regulations (IDAPA 58.01.01.322.13) establish Tier I operating permit durations for a fixed term of five years, except that a term of three to five years may be issued for the first term. Due to the size and complexity of the INEEL, and the limited number of INEEL and state personnel dedicated to permitting activities, the INEEL requests the renewal and reauthorization of the initial permit begin approximately two years after issuance. The renewal and reauthorization of the permit will be issued based upon facility area (i.e., as represented by area-specific volumes in this application) rather than the entire INEEL Site. The renewal and reauthorization will include annual review of Volume I as well as the volume pertaining to a given area. The recommended schedule is based on the size and complexity of a specific area's sources. The INEEL is providing the recommended initial schedule in Table I-3-1 in accordance with the provisions set forth in IDAPA 58.01.01.322.13. After the initial renewal, the INEEL requests that each area-specific volume be permitted for a period of five years, resulting in a staggered permit renewal process.

If the INEEL submits a timely and complete application for a Tier I operating permit renewal, but the state fails to issue or deny the renewal permit before the end of the term of the previous permit, the INEEL requests that all the terms and conditions of the previous permit, including the permit shield, remain in effect until the renewal permit has been issued or denied.

3.8 Tier I Operating Permit Application Modifications

The dynamic nature and complexity of INEEL operations dictate that the application will be modified within the given application review period. In addition, unintentional omission of a source(s) may be encountered, requiring application modifications. The application will be modified as needed to reflect changes in operations.

3.9 Tier I Operating Permit Modifications

The INEEL is requesting that only the affected portion(s) of the INEEL operating permit be opened when changes or modifications are required. The complexity and size of the INEEL are reflected in the need for ten separate volumes to organize the application information. The INEEL is requesting that the operating permit be issued in the same organization of volumes as described in this application. The large number and dynamic nature of the activities occurring at the INEEL ensure that there will be frequent modifications or new PTCs that will need to be incorporated into the future operating permit. These modifications to the permit will need to be done in a manner that allows a timely and concise approval process.

Table I-3-1. Renewal and reauthorization schedule for INEEL operating permit.

Area	Initial renewal schedule (yr)
Test Area North	2
Central Facilities Area	2
Radioactive Waste Management Complex	3
Radioactive Waste Management Complex (Advanced Mixed Waste Treatment Project)	3
Waste Reduction Operations Complex	3
Naval Reactors Facility	4
Test Reactor Area	4
Argonne National Laboratory-West	5
Idaho Nuclear Technology and Engineering Center	5
	Subsequent renewals-5 yr

Therefore, the INEEL is requesting that simple and more complex modifications be addressed individually. In this manner, simple modifications can be approved on a more expedited schedule and not be tied to more lengthy schedules required for more complex modifications. By separating the modification requests and handling each request individually, approvals may be obtained in a manner that least impacts operations at the INEEL and the state approval process.

3.10 INEEL Insignificant Sources

The 1990 Clean Air Act Title V Operating Permit Program requires each application to include a list of emissions for all regulated pollutants and each pollutant for which the facility is classified as a major source. The application also must identify and describe all emission points. States are allowed to exempt "insignificant" activities or emission units from permit application requirements.

The State of Idaho has listed criteria for identifying "insignificant activities." Two types of "insignificant" activities are listed: (1) those that are categorically exempt and may be omitted from the permit application, and (2) those that are exempt from the IDAPA 58.01.01.314 application requirements based on size or production rate, but which must be listed in the application.

For purposes of this application, "insignificant" activities that are potentially subject to an applicable requirement are referred to as "not-significant." Two types of "insignificant" activities will be discussed in this application: (1) categorically exempt activities (Section 3.11.1), which are allowed by IDAPA 58.01.01.317.01.a but do not include any point sources that would be subject to an applicable requirement like opacity, and (2) not-significant activities (Section 3.11.2), which are allowed by IDAPA 58.01.01.317.01.b but may be subject to the applicable requirements for opacity (IDAPA 58.01.01.625), or fuel sulfur content (IDAPA 58.01.01.725).

3.10.1 Exempt Insignificant Activities

Exempt insignificant activities are categorically exempt from all operating permit requirements as allowed by IDAPA 58.01.01.317.01.a. The INEEL has developed a categorically exempt insignificant activity list based on IDAPA 58.01.01.317.01.a but is tailored to the types of activities at the INEEL. This list does not include any sources that would be subject to an applicable requirement. INEEL activities in one of the categories listed below will not be specifically addressed in the application, and emissions associated with these activities will not be tracked or subsequently reported. INEEL categorically exempt insignificant activities include but are not limited to the following:

Landscaping and Groundskeeping Activities—INEEL landscaping activities include but are not limited to lawn care, plant care, small engine landscaping equipment, weed control, pest control, and general cleanup.

Janitorial Activities—INEEL janitorial activities include but are not limited to general cleaning of INEEL structures and areas, general housekeeping, steam sterilizers, and wax application. Application of chemicals for cleaning purposes is included.

Cafeteria Activities—INEEL cafeteria activities include but are not limited to preparation of meals by baking, frying, grilling, or any other means; cleanup of preparation areas; and cleaning of cafeteria utensils and equipment.

Personal Care Activities—INEEL personal care activities include but are not limited to lavatory activities, laundering, and use of personal care items.

Office Activities—INEEL office activities include but are not limited to general office support, printing operations, copy machines, blueprint machines, photographic laboratories, and office solid waste collection.

Safety Activities—INEEL safety activities include but are not limited to safety, emergency response, and fire protection training including training fires, outdoor firearms practice ranges, relief valves, rupture discs, traffic flares, security training, and salting or sanding of winter road surfaces.

Maintenance Activities—On location INEEL maintenance activities include but are not limited to general structure maintenance (painting, welding, carpentry), roofing and roof repair, machining, nonasbestos insulation, equipment cleaning and preservation, fuel-burning equipment maintenance and overhaul activities, road maintenance and repair, snow removal activities, parking lot maintenance and repair, and vehicle testing, maintenance, and repair.

Material Storage—INEEL material storage includes but is not limited to any clothing containers, storage of laboratory chemicals, solid materials (dust-free handling), solid waste containers, paint storage, battery storage, and battery room exhausts. Material storage also includes storage tanks limited to storage of surfactants, lubricants, hydraulic fluid, butane, propane, liquefied petroleum gas, cooking oils, and RCRA temporary accumulation areas.

Plant Support—INEEL plant support activities include but are not limited to drum handling and sampling, air compressors less than 100 horsepower, sand blasters, oil/water separators, nonprocess drying ovens, water treatment (salt bins, chlorination units, demineralizers, ion exchange, and regeneration of demineralizers and ion exchange), material testing, transformers, satellite accumulation areas, and reservoirs and pumping equipment limited to surfactants, lubricants, hydraulic fluid, cooking oils, hot cell window oil, and venting of buildings that house significant and not-significant sources/activities that have their own separate vents.

Medical Care Activities—INEEL medical activities include but are not limited to storage of medical supplies, use of chemicals to support medical activities, x-ray services, administering medications, and emergency medical operations.

Portable Small (<100 hp) Fuel-Burning Equipment—INEEL small portable fuel-burning equipment includes but is not limited to equipment available to borrow from the central equipment pool.

3.10.2 Not-Significant Activities

Not-significant activities are considered not-significant based on IDAPA 58.01.01.317.01.b. These activities will not be required to meet the substantive requirements of the operating permit (IDAPA 58.01.01.314.03), and information such as state application forms, descriptions, and compliance plans are not provided. Specific not-significant activities allowed by these exemptions are listed in the area-specific volumes. The following sections list the categories of not-significant activities that apply at the INEEL.

3.10.2.1 Organic Storage Vessels. Not-significant organic storage vessels (i.e., tanks) at the INEEL are used primarily for fuel oil and gasoline storage and occasionally for solvent storage, kerosene, hydrocarbon diluent, or stoddard solvent. Organic storage tanks are not-significant activities at the INEEL. Tanks larger than 10,567 gallons and built after July 23, 1984 are subject to 40 CFR 60 Subpart Kb. There are several tanks that are significant because of applicable requirements in 40 CFR 60 Subpart Kb. Significant tanks are discussed in Section 5.4 of this volume.

Tanks smaller than 10,000 gallons are not-significant activities according to IDAPA 58.01.01.317.01.b.i(3) [("Operation, loading and unloading of VOC storage tanks (including gasoline storage tanks, ten thousand gallons capacity or less, with lids or other appropriate closure, vapor pressure not greater than 80 mm Hg at 21 C"))].

Underground tanks larger than 10,000 gallons and built prior to July 23, 1984 are considered not-significant based on IDAPA 58.01.01.317.01.b.i(30) ("An emission unit or activity with emissions less than or equal to ten percent of the levels contained in IDAPA 58.01.01.92.a of the definition of significant and no more than 1 ton/yr of any HAP"). The emissions from this type of tank are less than 1 ton/yr of any hazardous air pollutant (HAP).

Outside tanks larger than 10,000 gallons and built prior to July 23, 1984 are also considered not-significant based on IDAPA 58.01.01.317.01.b.i(30). The emissions from this type of tank are less than 1 ton/yr of any HAP.

The total 1999 VOC-nonmethane emissions from all tanks were estimated at less than 1.0 ton/yr. The individual tanks that are larger than 10,000 gallon tanks are considered not significant since their combined emissions qualify under 58.01.01.317.01.b.i(30) [less than the 10% of significant emission rate

(10% of 40 ton/yr is 4 ton/yr) and less than 1 ton/yr]. Appendix A provides the organic tank emission calculation methodologies.

3.10.2.2 Inorganic Storage Tanks. The INEEL has various inorganic storage tanks including dilute aqueous solutions of inorganic salts, bases, and acids. Inorganic storage tanks at the INEEL may be considered not-significant based on IDAPA 58.01.01.317.01.b(19), (tanks, vessels, and pumping equipment, with lids or other appropriate closure for storage or dispensing of aqueous solutions of inorganic salts, bases and acids excluding

99% or greater H_2SO_4 or H_3PO_4
70% or greater HNO_3
30% or greater HCl
More than one liquid phase where the top phase is more than one percent VOCs.

3.10.2.3 Boilers, Burners, Heaters, and Furnaces. The INEEL utilizes various boilers, burners, heaters, and furnaces for space heating and hot water supplies as well as for process heat. Space heating and hot water combustion sources are not-significant based on IDAPA 58.01.01.317.01.b.i(18) "Space heaters and hot water heaters using natural gas, propane or kerosene and generating less than five million (5,000,000) Btu/hr."

- Other fuel burning equipment for indirect heating with a capacity less than 1 million Btu/hr input is not-significant based on IDAPA 58.01.01.317.01.b.i(7), "Combustion source, of less than 1 million (1,000,000) Btu/hr if using kerosene, No. 1 or No. 2 fuel oil."

The boilers at the INEEL not covered by the above categories for not-significant activities are discussed as significant sources.

HAP emissions from fuel oil combustion in boilers are not regulated except for beryllium, which is regulated by the INTEC Boiler PTC for emissions from only the INTEC boilers.

3.10.2.4 Multicraft Shops. To support general operations, the INEEL maintains several maintenance shops at the various operational areas. Activities in these shops include painting, welding, and fabrication. Painting operations support area craft operations including maintenance painting of equipment and painting of newly constructed equipment. These painting operations reflect general maintenance, repair, and construction activities at the INEEL; therefore, future activities at these operations would be difficult to predict. The smaller operations are considered not-significant activities based on IDAPA 58.01.01.317.01.b.i(17), "Surface coating, using less than two gallons per day." These sources will limit the use of paint to less than 2 gallons/day by posting the limited use of paint in the building. The larger painting operations are considered not-significant based on IDAPA 58.01.01.317.01.b.i(30) "An emission unit or activity with emissions less than or equal to ten percent of the levels contained in IDAPA 58.01.01.92.a of the definition of significant and no more than 1 ton/yr of any HAP." There are not-significant painting sources at the INEEL with less than 1 ton/yr/source of VOC-nonmethane emissions (methodology of these calculations is in Appendix D).

The INEEL has several locations for welding operations. The Specific Manufacturing Capability (SMC) facility located at TAN maintains welding support as part of the manufacturing process. The CFA multicraft shop complex includes welding support for all of the INEEL. Each individual area also has smaller welding operations. Welding operations at the INEEL support general maintenance and repair activities as well as the manufacturing processes at SMC. These welding activities are considered not-significant based on IDAPA 58.01.01.317.01.b(9) "Welding using not more than 1 ton/day of welding rod." These sources combined do not use more than 1 ton/day of welding rod.

Fabrication shops at the INEEL may also be considered not-significant based on IDAPA 58.01.01.317.b.i(23) "Rolling, forging, drawing, stamping, shearing, or spinning hot or cold metals."

Other multicraft shops at the INEEL, which may include parts cleaning as well, are considered not-significant based on IDAPA 317.01.b.i(30) "An emission unit or activity with emissions less than or equal to ten percent of the levels contained in IDAPA 58.01.01.92.a of the definition of significant and no more than 1 ton/yr of any HAP." The maximum potential particulate emissions for these shops do not exceed 0.7 ton/year.

3.10.2.5 Laboratories. The INEEL has both analytical and research laboratories. The analytical activities support various process and environmental physical and chemical analyses. The research activities support small-scale research for the DOE , other government agencies, and private entities. Examples of research and development sources include small, bench-scale studies of waste treatment and storage, material development, and innovative private technologies.

The types of analyses or other laboratory activities can change from day to day. Also, because of the batch type of work done at the INEEL, the levels of activity vary slightly from year to year.

Emissions from analytical and research laboratories at the INEEL are considered not-significant based on IDAPA 58.01.01 317.01.b.i (30) "An emission unit or activity with emissions less than or equal to ten percent of the levels contained in IDAPA 58.01.01.92.a of the definition of significant and no more than 1 ton/yr of any HAP." The maximum potential VOC-nonmethane emissions for these laboratories are well below the 10% of significance limit, or 2 tons, and is well below the 1-ton limit for any HAP. Radionuclide emission are considered not significant when they cause an annual effective dose equivalent of less than 0.01 mrem/yr.

3.10.2.6 Not-significant Radiological Sources. The INEEL contains a number of operations that emit radionuclides. Sources include both radioactive air effluent release points (i.e., vents and stacks) and diffuse sources. Radiological emission sources are considered not-significant when they cause an annual effective dose equivalent of less than 0.01 mrem/yr. Not-significant radiological sources must meet the criteria described in IDAPA 58.01.01.317.b.i.30 "An emission unit or activity with emissions les than or equal to ten percent (10%) of the levels contained in Section 006 of the definition of significant." Not-significant radiological sources at the Site are not required to meet the substantive requirements of the operating permit (IDAPA 58.01.01.314.03) since there are no source specific applicable requirements. However, ancillary facility wide requirements including annual emission determinations, periodic confirmatory monitoring, and record keeping of emission determinations and periodic monitoring are performed in accordance with 40 CFR Part 61, Subpart H. The annual radiological emissions from these sources are combined with all other radiolonuclide emissions from the INEEL to determine compliance with the 10 mrem/yr EDE as required in 40 CFR Part 61, Subpart H. The results are published in the INEEL National Emission Standards for Hazardous Air Pollutants-Radionuclides. Not-significant radiological sources are addressed in their area-specific volumes. The INEEL compliance strategy for radiological sources is located in Section 5.5.

3.11 Operating Permit Reporting and Recordkeeping Requirements

Currently the INEEL has reporting and recordkeeping requirements mandated for emission sources by specific regulations and/or permits. These requirements are reflected in the compliance certification (method of compliance) forms provided in Volume I and the area-specific volumes. Requirements for reporting and recordkeeping under the State of Idaho Tier I operating permit are not included on the compliance certification forms provided in this application since they do not currently apply. In these instances, reporting and recordkeeping requirements are indicated as NA (not applicable). These forms

will be updated on issuance of the INEEL Title V operating permit to reflect actual permit requirements if required.

The following sections briefly summarize the current reporting requirements and the proposed INEEL consolidated reporting and recordkeeping requirements under the Tier I operating permit program.

3.11.1 Reporting Requirements—IDAPA 58.01.01.322.08 and .11

The INEEL is currently required to submit various reports, including the annual NESHAP reports for radionuclide emissions, quarterly PTC reports of HEPA filter testing and radionuclide discharges to an evaporated pond, and semi-annual fuel usage reports to EPA. The INEEL will be required to submit a compliance certification report for the Tier I operating permit (IDAPA 58.01.01.322.11.a) at least annually, and semiannual reports for continuously monitored sources (IDAPA 58.01.01.322.08.c).

For annual compliance certification reporting, the INEEL proposes, in accordance with IDAPA 58.01.01.322.11.c, the following:

- Identification of each term or condition of the Tier I operating permit for which compliance is being certified.
- For each term or condition with which an emission unit or facility complies an emission unit compliance history and a statement that the emission unit will continue to comply with the given terms or conditions.
- A statement concerning whether the compliance was continuous or intermittent during the reporting period and, if intermittent, the dates of noncompliance.
- A description of the method(s) used for determining the compliance status of the emissions units throughout the compliance period.
- All other information necessary to determine the compliance status of the emissions unit, and such additional contents and requirements required by the State of Idaho or EPA.
- If a term or condition becomes effective during the term of the operating permit and does not contain a detailed compliance schedule, a statement that the emissions unit will meet the term or condition on a timely basis.
- If a term or condition becomes effective during the term of the operating permit and expressly contains a detailed compliance schedule, a statement that the emissions unit or facility will comply with the term or condition on the schedule provided in the term or condition.
- For each term or condition with which an emission unit or facility does not comply, a statement that the emission unit shall be in compliance during the entire subsequent reporting period or a statement that a compliance schedule will be provided.

All radionuclide emissions will be reported annually in the INEEL Radiological NESHAP Report. The report will include the compliance statements required by the operating permit rules and by 40 CFR 61 Subpart H. More frequent compliance certifications required by a prescribed applicable requirement will be addressed individually and may coincide with the periodic monitoring reports.

Required monitoring reports for continuous emission monitoring will be provided every six months. The monitoring reports will clearly identify all instances of deviation from operating permit requirements. The reports will be certified by the responsible INEEL official.

The INEEL currently submits quarterly, semiannual, and annual reports, as required.

3.11.2 Recordkeeping Requirements—IDAPA 58.01.01.322.07

The INEEL operating permit application incorporates by reference all applicable requirements regarding recordkeeping. The recordkeeping requirements for required monitoring will include, where applicable and reasonable, the date, time, and place of sampling or measurements; the date, performing company or entity, and the analytical techniques or methods of the corresponding analysis; the results of the analysis; and the operating conditions existing during sampling or measurement.

All monitoring records and support information will be retained for a period of five years from the date of the monitoring sample, measurement, report, or application. The supporting information includes but is not limited to calibration and maintenance records, and original strip chart recordings for continuous monitoring instrumentation, where applicable. Supporting information also includes all reports required by the operating permit. Additional supporting documentation includes annual emission calculations and other records that support the generation of the annual report. In general, the supporting documentation will not be provided in any compliance report unless specifically required.

3.12 Excess Emissions—IDAPA 58.01.01.314.12

The INEEL does not operate or maintain any equipment or processes for which predictable and routine excess emissions have been identified. Therefore, the INEEL will not apply for emission exemptions under this regulation.

3.13 Sulfur Content in Fuels

The INEEL will show compliance with the sulfur content of fuels required by IDAPA 58.01.01.725 with statements from the suppliers that they are providing fuel in compliance with the state requirements for applicable sulfur content in the fuel.

3.14 Fee Determination

With the exception of NRF, the INEEL presently pays registration fees according to a lump sum agreement, as described in IDAPA 58.01.01.538 (01). In the past, the lump sum has averaged $500,000.00 annually in the form of a two-year grant to the Idaho Department of Environmental Quality.

3.15 Non-Major Designation for Hazardous Air Pollutants

Laboratory-wide use of hazardous substances and materials is monitored and maintained by the INEEL Chemical Management System. Hazardous materials and substances are tracked from warehousing, institutional distribution, and use.

The INEEL requests a voluntary Permit Emission Limit (PEL) of 24.9 aggregate tons/yr of HAPs and 9.9 tons/yr of any single HAP for determining major status. Compliance with this PEL will be determined by assuming a 100% release rate for all HAPs listed in section 112 of the Clean Air Act for managed chemicals and estimated emissions from the Annual Air Emissions Inventory.

As of this writing, the facility is minor for HAPs with an estimated emission total of 3.19E+00 aggregate tons/yr.

4. SUMMARIZED THE APPLICABLE FEDERAL AND STATE REQUIREMENTS

4.1 Applicable Regulatory Requirements

Regulations having specific requirements applicable to emission units at the INEEL are summarized in Table I-4-1. The number of sources applicable to specific requirements varies from a few to many. Similarly, certain sources are subject to more than one regulation. These requirements are being presented in Volume I to limit duplication in the source sections of the area-specific volumes. Where applicable, sources in area-specific volumes will refer to this section, the specific listed requirement, and its corresponding compliance methodology described in Section 5. Each source, if required, will have a compliance statement addressing these and any other specified applicable requirements.

Cited regulations provide information, require permitting actions, set emissions limitations, require the submission of information to regulatory agencies, and require other actions under specified conditions.

4.2 INEEL Permits

The INEEL has air permits from the Idaho DEQ. These permits are for a variety of emission sources ranging from oil fired boilers to evaporation ponds. The INEEL has a Site-wide NO_x permit, the Idaho Nuclear Technology and Engineering Center Nitrogen Oxide Sources Permit to Construct, which provides limitations and terms for some fuel-burning sources. This permit sets limits for specified boilers and furnaces located in several INEEL areas, provides limitations on some operations at the INTEC, and requires ambient nitrogen oxide monitoring. Other current PTCs are discussed in the area-specific volumes. Appendix H, INEEL Air Permits, provides a list of the air permits.

Table I-4-1. Source-specific requirements.

Citation	Title
	Federal Air Regulations
40 CFR 60 Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
§60.42c	Standard for sulfur dioxide
§60.44c	Compliance and performance test methods and procedures for sulfur dioxide
§60.48c	Reporting and recordkeeping requirements
40 CFR 60 Subpart Kb	Standards of Performance for Volatile Organic Liquid Storage Vessels (Incl. Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984
§60.116b	Monitoring of Operations
40 CFR 61 Subpart M	National Emission Standards for Asbestos
§61.154	Standards for Active Waste Disposal Sites
40 CFR 61 Subpart H	National Emission Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities
40 CFR 80 Subpart B	Regulation of Fuels and Fuel addition
80.22	Controls and Prohibition
80.27	Controls and Prohibition on gasoline volatility
80.29	Controls and Prohibition on diesel fuel quality
	State of Idaho Air Regulations (IDAPA 58.01.01)
.223.05	Annual Report For Toxic Pollutant Exemptions
.625.	Visible Emissions
.675.	Fuel Burning Equipment-Particulate Matter
.700.	Particulate Matter-Process Weight Limitations
.725.	Rules for Sulfur Content of Fuels
.785.	Rules for Control of Incinerators

5. INEEL COMPLIANCE STRATEGY—SOURCE REQUIREMENTS

The INEEL manages various types of equipment and operations with stationary sources subject to one or more of the regulatory requirements discussed in Section 4. These sources (e.g., organic storage tanks, fuel-burning equipment, radiological sources) are widely distributed throughout the INEEL but are subject to regulatory requirements having standard compliance methodology and emission calculation methods. Therefore, regulatory requirements and corresponding standardized methods used to maintain compliance throughout the eight INEEL operational areas are reflected in the following sections for each source type. Each section includes a description of the affected source types, the regulatory requirement(s), general compliance methodology, and emissions calculations. The source types and corresponding requirements discussed include but are not limited to:

- Point sources subject to visible emission (opacity) requirements, IDAPA 58.01.01.625
- Fuel-burning equipment subject to particulate emission requirements, IDAPA 58.01.01.675
- Small steam generating sources subject to 40 CFR 60 Subpart Dc
- Organic storage vessels subject to 40 CFR 60 Subpart Kb
- Radiological sources subject to 40 CFR 61 Subpart H
- Incinerators subject to particulate emission requirements, IDAPA 58.01.01.785
- Waste disposal sites for asbestos subject to 40 CFR 61 Subpart M
- Particulate matter process weight limitations, IDAPA 58.01.01.700
- Sulfur content of fuels, IDAPA 58.01.01.725
- Fuel Regulation, 40 CFR 80 Subpart B.

The INEEL is also subject to specific permits as described in Section 4.2. Since most of these permit requirements apply to specific sources, they are described in the area-specific volumes. Ambient nitrogen oxide monitoring is not related to any single source and is therefore described in this section rather than the area-specific volumes.

Standardized compliance certification forms are in the following sections, where applicable. State operating permit application forms, specific source and process descriptions, and other required information for sources subject to the standardized methodology are in the area-specific volumes. Nonstandardized compliance certification forms are in the area-specific volumes. Deviations from standardized methodology presented in the following sections, if required by individual sources, are clearly noted in the individual area or source sections.

5.1 Point Sources-Visible Emissions—IDAPA 58.01.01.625

5.1.1 Description

All point sources in the State of Idaho are subject to visible emission limitations, as determined by emission opacity. Visible emissions may occur in some form from many air pollutant emission points at the INEEL, although they are commonly associated with the fuel-burning equipment or manufacturing processes. Based on the broad applicability of this regulation to all sources, compliance with opacity requirements is being addressed in this section as a global requirement for the entire INEEL. For this reason, visible emissions will not necessarily be addressed in the individual source sections of the area-specific volumes.

5.1.2 Requirement—IDAPA 58.01.01.625

The State of Idaho regulates visible emissions of any air pollutant from any point of emission, excepting visible emissions caused by NO_x. Visible emissions shall not exceed 20% opacity for a period or periods aggregating more than 3 minutes in any 60-minute period. The INEEL is in compliance with this requirement.

5.1.3 Compliance Methodology

Compliance methodology for visible emission requirements includes visual inspection of emissions by a certified emission evaluator, as summarized in the compliance certification form that follows (Figure I-5-1).

COMPLIANCE CERTIFICATION (METHOD OF COMPLIANCE) FORM

Visible Emissions—IDAPA 58.01.01.625

REQUIREMENT

Requirement: Do not have opacity greater than 20% for a period or periods aggregating 3 minutes in any 60-minute period (excluding opacity attributable to NO_x)

Requirement basis: IDAPA 58.01.01.625

Compliance method type: State qualified opacity evaluation

REFERENCE TEST METHOD

Reference test method description: Visual opacity determination by certified emission evaluator

Reference test method citation: Procedures Manual for Air Pollution Control, Section II (Evaluation of Visible Emissions Manual)

MONITORING

Monitoring device type: Visual

Monitor location description: As described in Evaluation of Visible Emissions Manual

Regulated air pollutant being monitored: Opacity

Generally describe the frequency and duration of sampling and how the data will be reported:

As needed, trained observers will conduct opacity determinations

RECORDKEEPING

Data (parameter) being recorded: Opacity

Frequency of recordkeeping (how often data recorded): When reading is taken

REPORTING

Generally describe what is reported: NA

Frequency of reporting: NA

Beginning date: NA

Figure I-5-1. Compliance Certification Form (method of compliance).

5.2 General Fuel-Burning Sources—Particulate Matter—IDAPA 58.01.01.675

This section applies to the determination of particulate emissions from fuel-burning equipment.[a] The INEEL operates numerous types of fuel-burning equipment including boilers, furnaces, and heaters. Based on the broad applicability of this regulation to all fuel-burning sources, compliance with particulate emission requirements is addressed in this section as a global requirement for the entire INEEL. For this reason, particulate emissions from fuel-burning sources will not be addressed in the individual source sections of the area-specific volumes.

5.2.1 Description

Boilers are used throughout the INEEL to provide heat and process steam. Fuels used range from natural gas to fuel oil. Boiler sizes range from residential-sized heaters to the fuel oil-fired steam generation boilers at INTEC. Boiler operation schedules vary depending on operations, weather, and facility operation schedules. Because of the critical need for boilers in several areas, many boiler installations include up to 100% backup capacity for emergencies. These backup boilers are generally operated for maintenance purposes only. Smaller space heaters and furnaces provide space heat to office and work areas.

5.2.2 Requirement—IDAPA 58.01.01.675

Fuel-burning sources are subject to particulate matter emission limitations under IDAPA 58.01.01.675 et seq. (see next section). The INEEL maintains sources that use gas and liquid fuel. The date of initial operations has no bearing on gas and liquid fuel-burning source emission limits.

5.2.3 Compliance Methodology

Variable parameters are required for the calculations to provide particulate emissions data. These data can only be obtained through stack testing. Therefore, the INEEL will show compliance with this requirement based type and quantity of fuel burned.

Fuel type	Allowable particulate(Gr/dscf)	Emissions oxygen
Gas	0.015	3%
Liquid	0.050	3%

a. Fuel-burning equipment is defined as "any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer (IDAPA 58.01.01.006.39)."

5.3 Small Steam-Generating Units—40 CFR 60 Subpart Dc

5.3.1 Description

The INEEL operates seven small steam-generating units that must meet requirements under 40 CFR 60 Subpart Dc.

5.3.2 Requirements-40CFR60 subpart Dc

Based on design heat input ≤100 MBtu/hr and built after June 9, 1989. Units meeting these requirements must submit a semi-annual certification on what fuels were combusted and the sulfur content of the fuel (less than 0.5 percent sulfur).

5.3.3 Compliance Methodology

The INEEL submits the semi-annual certification as required. Details of the compliance methodologies are in the appropriate area-specific volumes.

5.4 Organic Storage Vessels—40 CFR 60 Subpart Kb

5.4.1 Description

The INEEL has numerous volatile organic storage vessels, primarily fuel storage tanks, which have been in place from the beginning of operations. The majority of these storage vessel sources were built prior to July 23, 1984 (i.e., the regulatory date affecting sources), or do not meet the capacity limitations set forth in 40 CFR 60 Subpart Kb. Therefore, they do not have any source-specific compliance requirements. Some INEEL storage vessels meet the applicability requirements of this subpart and are subject to regulation under 40 CFR 60 Subpart Kb—seven located at CFA, four at TAN, four at NRF, and one at ANL-W. Each of the affected units, their designations, capacities, and products are included in the significant list of the cited area-specific volumes.

5.4.2 Requirements—40 CFR 60 Subpart Kb

Based on the capacity and vapor pressure of organic liquids stored in applicable vessels, these units are subject to only certain recordkeeping requirements regarding vessel capacity [§60.116b(b)].

5.4.3 Compliance Methodology

The INEEL maintains records of the capacity of each affected source in design and compliance documentation. Design capacity can be readily established from measurements and capacity conversion tables. The INEEL is in compliance with this requirement. A compliance certification form is provided in Figure I-5-2.

COMPLIANCE CERTIFICATION (METHOD OF COMPLIANCE) FORM

Organic Storage Vessels—40 CFR Subpart Kb

REQUIREMENT

Requirement: The owner or operator of each applicable storage vessel shall keep readily accessible records showing the dimensions of the storage vessel and an analysis showing the capacity of the storage vessel. These records shall be kept for the life of the source.

Requirement basis: 40 CFR 60.110b, 60.110b(a), and 60.116b(b); (40 CFR Kb)

Compliance method type: Recordkeeping

REFERENCE TEST METHOD

Reference test method description: NA

Reference test method citation: NA

MONITORING

Monitoring device type: NA

Monitor location description: NA

Regulated air pollutant being monitored: NA

Generally describe the frequency and duration of sampling and how the data will be reported: NA

RECORDKEEPING

Data (parameter) being recorded: Dimensions and capacity of storage tank

Frequency of recordkeeping (how often data recorded): One time for each construction

REPORTING

Generally describe what is reported: NA

Frequency of reporting: NA

Beginning date: NA

Figure I-5-2. Compliance Certification Form (method of compliance).

5.5 INEEL Radiological Sources—40 CFR 61 Subpart H

All INEEL radiological sources are subject to regulation under 40 CFR 61 Subpart H, "National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities." The INEEL also operates sources that have additional radiological source requirements under PTCs acquired through permitting actions with the State of Idaho. Since PTC requirements do not apply to nonpermitted sources, requirements under §61 Subpart H and those of PTCs are discussed in separate sections (5.5.1 and 5.5.2, respectively).

The INEEL will maintain the current radiological air emissions program to meet the requirements of the State of Idaho operating permit rules and regulations for radionuclides. The current INEEL radiological air emissions program complies with the requirements of the state operating permit rules and regulations (IDAPA 58.01.01.300–399) as demonstrated in the Subpart H compliance program and the additional information described in this section.

5.5.1 Sources Subject to 40 CFR 61 Subpart H

All INEEL radionuclide sources are subject to regulation under 61 Subpart H. Information concerning these sources is in the area-specific volumes.

5.5.1.1 Requirements—40 CFR 61 Subpart H. 40 CFR 61 Subpart H defines the radiological emission standards for DOE facilities. It states that "Emissions of radionuclides to the ambient air from Department of Energy facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr" (§61.92)(hereafter referred to as "dose"). For purposes of NESHAP regulatory applicability determinations, a facility is considered all the buildings, structures, and operations within one contiguous site (e.g., the INEEL is a contiguous Site and is considered the facility).

Sources that could discharge radionuclides into the air in quantities that could cause an effective dose equivalent in excess of 1% (0.1 mrem/yr) of the standard are subject to requirements for continuous emission monitoring [§61.93(a) and (b)(2)] (See next section.). All other radiological sources are subject to annual dose modeling [§61.93(a)] and periodic confirmatory measurements [§61.93(b)(4)(i)] to ensure their potential dose equivalent is less than 1% of the standard (10 mrem/yr).

Requirements for radiological sources also include quality assurance [§61.93(b)(5)(v)] for continuously monitored emission sources, compliance and reporting (§61.94), and recordkeeping (§61.95). Compliance methodology for each of these sections is described in Section 5.5.1.2.

5.5.1.2 Compliance Methodology. The INEEL has radiological sources in two categories: (1) those requiring continuous compliance monitoring [§61.93(b)], and (2) those not requiring continuous compliance monitoring. Emissions of fugitive and area sources are factored into the composite reporting and demonstration of compliance with the NESHAP dose standard (as outlined in the annual radiological NESHAP report). Compliance methodology for sources subject to continuous compliance monitoring, other INEEL radiological sources, periodic confirmatory measurements, annual dose modeling, and reporting and recordkeeping requirements are discussed in separate sections of this volume.

5.5.1.2.1 Continuous Compliance Monitoring Sources-§61.93(b)(2)—To demonstrate compliance with the 10 mrem/yr standard, "Radionuclide emission measurements...shall be made at all release points which have a potential to discharge radionuclides into the air in quantities which could cause an effective dose equivalent in excess of 1% of the standard." 40 CFR 61 Subpart H defines the "potential" of a release point as "the estimated radionuclide release rates shall be based on the

discharge of the effluent that would result if all pollution control equipment did not exist, but the facilities' operations were otherwise normal." In other words, a stack (or release point) is required to be continuously monitored for compliance if its normal uncontrolled emissions could exceed 0.1 mrem/yr. In addition, "all radionuclides which could contribute greater than 10% of the effective dose equivalent for a release point shall be measured." Eight release points require continuous compliance monitoring at the INEEL. These points comprise greater than 99.9% of the potential dose to the maximally exposed individual, whereas the remaining release points (approximately 100) cumulatively account for less than 0.1% of the potential dose. The following 8 sources have been or may be subject to continuous compliance monitoring:

INTEC-708 Vent 001	INTEC Main Stack
INTEC-659 Vent 033[a]	NWCF Processing Cells
ANL-785 Vent 018	HFEF Stack
ANL-764 Vent 001	ANL-W Main Stack
PER-765 Vent 001	Waste Experimental Reduction Facility Exhaust East Stack
PER-755 Vent 001	Waste Experimental Reduction Facility Exhaust North Stack
TAN-734 Vent 001	Tan Hot Shop Stack
NRF-618-237	ECF Dry Cell (October 2001)

a This stack will require continuous monitoring when the debris treatment activities are started. A PTC has been obtained but a RCRA Permit has not yet been issued. Stack monitor is inplace and working at this time.

Monitoring of these stacks may cease if associated emission activities also cease. Major emission activities at WERF and INTEC have ceased and the status of the stack monitors was being evaluated at the time this application was submitted.

Details on these stacks, including a description of their monitoring systems, are in the area-specific volumes of this operating permit application. Compliance with the NESHAP and the Title V operating permit requirements for these sources will be demonstrated with semiannual reports to the State of Idaho. Compliance certification forms (radiological portion only) for these facilities are provided in Figure I-5-3.

In addition to the comprehensive reporting and recordkeeping requirements, these stacks are characterized through a detailed quality assurance and quality control program.

A quality assurance program [§61.93(b)(5)(v)] is required for all continuous compliance monitored sources that meet the performance requirements described in 40 CFR 61, Appendix B, Method 14. The program ensures that the emission measurements are representative and are of known precision and accuracy, and includes administrative controls to ensure prompt response when emission measurements indicate unexpectedly large emissions. The program consists of a system of policies, organizational responsibilities, written procedures, data quality specifications, audits, corrective actions, and reports.

COMPLIANCE CERTIFICATION (METHOD OF COMPLIANCE) FORM

Continuous Compliance Monitoring Sources—§ 61.93(b)(2)

REQUIREMENT

Requirement: Emissions of radionuclides to the ambient air from these sources in combination with all other INEEL sources shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr. (Sources with normal potential uncontrolled doses greater than 0.1 mrem/yr.)

Requirement basis: 40 CFR 61.92

Compliance method type: Continuous compliance monitoring

REFERENCE TEST METHOD

Reference test method description: Radioactive emissions and effective dose equivalent values to members of the public

Reference test method citation: EPA approved sampling procedures, computer models CAP-88 or AIRDOS-PC, or other procedures for which EPA has granted prior approval

Reference test method description: Effluent flow rate measurements

Reference test method citation: 40 CFR 60 Appendix A Method 2/2A

Reference test method description: Collection and measurement of radionuclides

Reference test method citation: 40 CFR 61 Appendix B, Method 114

Reference test method description: Quality Assurance

Reference test method citation: 40 CFR 61 Appendix B, Method 114

MONITORING

Monitoring device type: Continuous compliance monitoring in accordance with 40 CFR 61.93 b)(2)

Monitor location description: 40 CFR 60 Appendix A Method 1 [see 40 CFR 61.93 (b)(2)(I)]

Regulated air pollutant being monitored: All radionuclides that could contribute greater than 10% of the potential effective dose equivalent

Generally describe the frequency and duration of sampling and how the data will be reported:

These monitors are the continuous sampling type (The requirements for continuous sampling are applicable to batch processes when the unit is in operation). Completeness goals (as well as other quality assurance goals) are found in each stack's quality assurance plan. Samples are collected at various frequencies varying from daily to monthly and are analyzed in accordance with the referenced test methods. Data for these stacks are reported in an INEEL database. Other reporting and recordkeeping requirements are described below.

Figure I-5-3. Compliance Certification Form (method of compliance).

COMPLIANCE CERTIFICATION FORM (continued)

RECORDKEEPING

Data (parameter) being recorded: Documentation of all input parameters including the results of all measurements upon which they are based, calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine effective dose equivalent

Frequency of recordkeeping (how often data is recorded): Annual

REPORTING

Generally describe what is reported: (1) Highest effective dose equivalent to any member of the public at any offsite point where there is a residence, school, business or office (semiannually) (2) The name and location of the facility; a list of the radioactive materials used at the facility; a description of the handling and processing that the radioactive materials undergo at the facility; a list of the stacks or vents or other points where radioactive materials are released to the atmosphere; a description of the effluent controls that are used on each stack, vent, or other release point and an estimate of the efficiency of each control device; distances from the points of release to the nearest residence (i.e., home, house apartment building, or other place of dwelling which is occupied during any portion of the relevant year), school, business, or office, and the nearest farms producing vegetables, milk, and meat; the values used for all other user-supplied input parameters for the computer models (e.g., meteorological data) and the source of these data; a brief description of all construction and modifications which were completed in the calendar year for which the report was prepared (annually).

Frequency of reporting: Annually

Beginning date: In effect since 1991

Figure I-5-3. (continued).

5.5.1.2.2 All Other Radiological Sources-§61.93(a)—Whereas the NESHAP regulations are very specific concerning the requirements that apply to continuous compliance monitoring sources, the regulations [§61.93(a)] are not prescriptive concerning measurement of radionuclide emissions from all other sources. This operating permit application outlines the specific methodologies used to yearly demonstrate compliance with the NESHAP regulations. Compliance certification form(s) for radionuclide emissions from sources not requiring continuous emission monitors are seen in Figure I-5-4.

Each noncontinuously monitored source (or group of sources) has an emission calculation methodology associated with it. These methodologies consist of either engineered calculations or field measurements (or a combination of the two). To simplify presentation of these various methodologies, four common techniques used to calculate emissions are present in Appendix E of this volume. The calculations reflect general methods; supporting details and factors are specified in Volumes II through IX. As discussed in the previous section, yearly compliance will be based on actual releases to the environment and not on the unabated or unfiltered releases.

Each release point has been evaluated against the 0.1 mrem/yr uncontrolled dose standard. To ensure continued compliance with the requirements of this standard, the INEEL maintains a periodic confirmatory measurement program to reverify that the doses caused by uncontrolled emissions remain at or below 0.1 mrem/yr as described in the following section.

5.5.1.2.3 Periodic Confirmatory Measurements-§61.93(b)(4)(i)—NESHAP regulations mandate that for "other release points which have the potential to release radionuclides into the air, periodic confirmatory measurements shall be made to verify the low emissions." The purpose of the periodic confirmatory measurement is not the same as the emission calculation used annually to demonstrate compliance with the NESHAP. The purpose is to verify that release points emissions are still at or below the 0.1 mrem/yr uncontrolled standard used to determine whether continuous compliance monitoring is necessary. These uncontrolled emissions are determined as needed for operational changes via calculations based on process information or field measurements (see Appendix E of this volume for an illustration of the types of techniques used to determine uncontrolled radiological emissions).

The periodic confirmatory measurements program is an additional requirement to ensure that a stack is properly designated. This program does not in any way displace or circumvent the PTC modification process. Any modification to a facility that results in the physical capability to increase emissions will still have to go through the permit modification process.

COMPLIANCE CERTIFICATION (METHOD OF COMPLIANCE) FORM

All Other Radiological Sources—§61.93(a)

REQUIREMENT

Requirement: Emissions of radionuclides to the ambient air from these sources in combination with all other INEEL sources shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr. (Sources with normal potential doses less than or equal to 0.1 mrem/yr.)

Requirement basis: 40 CFR 61.92

Compliance method type: Emission calculations, discussed in Section 5.5.1.3

REFERENCE TEST METHOD

Reference test method description: Determining radioactive emissions and effective dose equivalent values to members of the public

Reference test method citation: EPA approved sampling procedures, computer models CAP-88 or AIRDOS-PC, or other procedures for which EPA has granted prior approval

MONITORING

Monitoring device type: NA

Monitor location description: NA

Regulated air pollutant being monitored: NA

Generally describe the frequency and duration of sampling and how the data will be reported: NA

RECORDKEEPING

Data (parameter) being recorded: Documentation of all input parameters including the results of all measurements upon which they are based, calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine effective dose equivalent

Frequency of recordkeeping (how often data recorded): Annually

Figure I-5-4. Compliance Certification Form (method of compliance).

COMPLIANCE CERTIFICATION FORM (continued)

REPORTING

Generally describe what is reported: (1a) Highest effective dose equivalent to any member of the public at any offsite point where there is a residence, school, business, or office, (2b) The name and location of the facility; a list of the radioactive materials used at the facility; a description of the handling and processing that the radioactive materials undergo at the facility; a list of the stacks or vents or other points where radioactive materials are released to the atmosphere; a description of the effluent controls that are used on each stack, vent, or other release point, and an estimate of the efficiency of each control device; distances from the points of release to the nearest residence (i.e., home, house apartment building, or other place of dwelling which is occupied during any portion of the relevant year), school, business, or office, and the nearest farms producing vegetables, milk, and meat; the values used for all other user-supplied input parameters for the computer models (e.g., meteorological data) and the source of these data; a brief description of all construction and modifications which were completed in the calendar year for which the report was prepared.

Frequency of reporting: Annually

Beginning date: In effect since 1991

Figure I-5-4. (continued).

5.5.1.2.4 Dose Modeling—The INEEL will use CAP-88, AIRDOS-PC, or other procedures for which EPA has granted prior approval as models to determine dose. Yearly modeling runs will be performed individually on each stack undergoing continuous compliance monitoring using actual annual meteorological data. Dose modeling (used to demonstrate compliance with the rolling year) for the eight continuous compliance monitored stacks will be based on recent meteorological data. Modeling for all other sources will be based on annual releases from each major INEEL operations area (e.g., INTEC, TRA, etc.).

As specified by 40 CFR 61.93 (a)(4)(i), only those radionuclides that contribute at least 10% of the continuous compliance monitored stack's potential effective dose equivalent will be specifically measured. Consistent with this policy, the same type of standard will apply to the dose modeling runs used to satisfy 40 CFR 651.93(a). Namely, radionuclides (except fallout from atomic weapons testing and naturally occurring radionuclides) that make up greater than or equal to 10% of the potential effective dose equivalent will be modeled. Only naturally occurring radioactive material whose radioactive content has been enhanced and subsequently managed at the INEEL will be included. This standard applies to both parent and daughter progeny radionuclides (e.g., Cs-137 and its daughter progeny, Ba-137m).

To adequately assess the dose calculations, the annual radiological NESHAP report will also provide all of the modeling and calculation parameters, including a list of radionuclides on which the modeling was based. The semiannual compliance certification report for all continuous compliance monitored stacks will be issued to the Idaho DEQ by June 30 and December 31 each year. The June 30 report will be based on the previous calendar year's actual aggregate emissions. The December 31 semiannual compliance certification report will be based on a rollup of the January through June dose modeling for all continuous compliance monitored stacks. See Section 3.11 of this volume for requirements relating to these input parameters.

5.5.1.2.5 Compliance and Reporting-§61.94—DOE has submitted an INEEL radiological NESHAP report to the EPA annually beginning on June 30, 1991 (calendar year 1990 report). The report reflects the information required by 40 CFR 61.94(b) and includes the name and location of the facility; a list of the radioactive materials; a description of the handling and processing of radioactive materials; a list of stacks, vents, and other sources of radioactive emissions; a description of the effluent controls and an estimate of efficiency of the control equipment used on each emission point; the distances from the points of release to the nearest receptor and nearest agricultural operation; the modeling input values and associated references; and a description of all construction and modifications (for which the requirement to apply for approval to construct was waived under 40 CFR 61.96) completed in the previous calendar year. This report is signed by a corporate officer and provides a certification statement.

INEEL compliance reporting of radiological emissions for the Title V operating permit meet the radiological NESHAP regulations in 40 CFR 61.94, "Compliance and Reporting." Compliance with the EPA standard is determined by calculating the highest effective dose equivalent to any member of the public at any offsite point where there is a residence, school, business, or office. The owners or operators of each facility are required to submit an annual radiological NESHAP report to both EPA headquarters and the appropriate EPA regional office by June 30; the report includes the results of the monitoring as recorded in DOE's Effluent Information System and the dose calculations required by §61.93(a) for the previous calendar year. As part of an operating permit condition, this report will also be submitted to the State of Idaho. To fulfill the six-month reporting requirement, a separate report will be forwarded to the state (by December 31) that will include all sources that require continuous compliance monitoring. Section 3.11 of this volume contains additional information regarding reporting requirements.

The INEEL complies with the current aggregate limit of 10 mrem/yr for all of its radiological sources.

5.5.1.2.6 Recordkeeping Requirements-§61.95—As required by 40 CFR 61.95, the INEEL maintains records documenting the source of modeling input parameters, including the results of all measured emissions, calculations, and analytical methods used to derive values for input parameters, and the procedure used to determine the effective dose equivalent. The documentation is sufficient to allow an independent auditor to verify the accuracy of the reported compliance with the standard, and the records are maintained for five years. Section 3.11 of this volume contains additional information regarding recordkeeping requirements.

5.5.1.3 Emission Calculations. Four emission calculation methodologies are used to determine radiological emissions at the INEEL for sources with uncontrolled emission potentials less than or equal to 0.1 mrem/yr. Sources with potential uncontrolled emissions greater than 0.1 mrem/yr require continuous compliance monitoring in accordance with the requirements of this section and the compliance certification form. If a facility or release point uses a unique methodology, information necessary to determine emissions is provided in the area-specific volume. The methods, coupled with the facility-specific information found in Volumes II through X and the compliance certification form, represent the methodology used by the INEEL to calculate radiological emissions. The four methods are described in Appendix E.

In each of the four methodologies, a radiological source term is determined in units of curies per year. These source terms are then input into the dose model (CAP-88) to determine the effective dose equivalent for a release point or group of release points.

Gross alpha (α) and beta/gamma (β/γ) activity concentrations may be measured. The gross activity measurements must be converted to estimates of releases of specific radionuclides for dose calculations. Two approaches are commonly used. First, it is common to assume that the gross activity consists of α and β radionuclides causing the highest dose per curie (i.e., assuming plutonium-239 for a gross α emitter and Sr-90 for gross β activity). Second, if the relative fractional concentration of the radionuclides is known and the detector is sufficiently responsive to each of these isotopes, each isotope's contribution can be determined by multiplying by this relative fraction.

5.5.2 Description—Sources Subject to Permit Requirements

The INEEL has several State of Idaho PTCs for radiological sources. PTC requirements are specific to operating equipment and therefore are discussed in the area-specific volumes.

5.6 INEEL Incinerators—IDAPA 58.01.01.785

The INEEL has one incinerator subject to State of Idaho regulation for emission of particulate matter (IDAPA 58.01.01.785). Incinerators shall have no more than 0.2 lb of particulate emissions per 100 lb of refuse burned. New incinerators are also subject to certain design criteria. The INEEL incinerator is located at TAN (Volume VII). A description of the incinerator, its compliance methodologies, and emission calculations are provided in the Volume VII.

5.7 INEEL Asbestos Waste Disposal Facilities—40 CFR 61.154

5.7.1 Description

The INEEL maintains two waste disposal facilities for asbestos-containing material: the Subsurface Disposal Area (SDA) located at the RWMC which receives radiologically contaminated asbestos, and the CFA INEEL landfill complex which receives nonradioactively contaminated asbestos. Active asbestos waste disposal facilities are subject to Section §61.154 of 40 CFR 61 Subpart M.

Asbestos-containing waste from demolition and renovation projects across the INEEL is transported to either the INEEL landfill complex at CFA or the SDA for disposal based on the presence of radionuclide contamination. The asbestos is disposed of in a dedicated pit at the INEEL landfill complex at CFA. Asbestos disposal at the SDA is logged to indicate the disposal location within the SDA.

Asbestos disposal operations at these locations are subject to the "no visible emission" limit, recordkeeping, and reporting requirements stipulated in 40 CFR 61.154. Based on the asbestos waste handling methods employed at the INEEL whereby no emissions occur during normal and routine operations, the asbestos emission at the INEEL landfill complex at CFA and SDA are considered not-significant. The asbestos disposal operations at the SDA and the INEEL landfill complex at CFA are in compliance with 40 CFR 61.154.

The operations at the INEEL landfill complex at CFA and SDA require that asbestos waste be packed in bags or other nonrigid packaging that is dust- and sift-proof, and contained in strong, sealed, leak-tight, dust-tight containers.

5.7.2 Requirement—40 CFR 61.154

There must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste has been deposited. For all asbestos-containing material received, the owner or operator of the active waste disposal site shall maintain stipulated waste generator, shipment, and receipt records for at least two years, and maintain records concerning the location, depth, and quantity of waste disposed of until closure of the facility. Significant amounts of improperly enclosed or uncovered waste and unresolved discrepancies between waste shipment records and quantities of waste received must be reported to the agency responsible for the local asbestos NESHAP program.

5.7.3 Compliance Methodology

The compliance methodology for the SDA and the INEEL landfill complex at CFA asbestos disposal operations include visual inspection of waste containers to ensure they are sealed and required recordkeeping and reporting. The methodology is summarized in the compliance certifications in Figures I-5-5 and I-5-6.

COMPLIANCE CERTIFICATION (METHOD OF COMPLIANCE) FORM

40 CFR 61.154 Asbestos—No Visible Emissions

REQUIREMENT

Requirement: There must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material is deposited

Requirement basis: 40 CFR 61.154

Compliance method type: Containment-bagged friable asbestos is received and disposed of only in closed, sealed containers

REFERENCE TEST METHOD

Reference test method description: NA

Reference test method citation: NA

MONITORING

Monitoring device type: Visual inspection

Monitor location description: NA

Regulated air pollutant being monitored: Visible asbestos emissions

Generally describe the frequency and duration of sampling and how the data will be reported: Trained workers inspect containers for integrity and visible asbestos emissions during waste receipt, handling, and disposal

RECORDKEEPING

Data (parameter) being recorded: NA

Frequency of recordkeeping (how often data recorded): NA

REPORTING

Generally describe what is reported: NA

Frequency of reporting: NA

Beginning date: NA

Figure I-5-5. Compliance Certification Form (method of compliance).

COMPLIANCE CERTIFICATION (METHOD OF COMPLIANCE) FORM

40 CFR 61.154 Asbestos—Reporting and Recordkeeping

REQUIREMENT

Requirement: For all asbestos-containing waste material received, the owner and operator of the waste disposal site shall maintain (1) waste shipment records that include the name, address, and telephone number of the waste generator and transporter(s), (2) the quantity of the asbestos- containing waste material in cubic meters (cubic yards), (3) the presence of improperly enclosed or uncovered waste, or any asbestos-containing waste material not sealed in leak-tight containers, and (4) the date of the receipt. A signed waste shipment record must be returned to the generator as soon as possible and no later than 30 days after receipt of the waste. Discrepancies between the quantity of waste designated on the shipment record and the actual quantity received must be resolved within 15 days or it must be reported to the local, state, or EPA office responsible for administering the asbestos NESHAP program for the disposal site. A copy of all records and reports must be maintained for at least 2 years. Records and maps; diagrams containing the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site must be retained until facility closure.

Requirement basis: 40 CFR 61.154

Compliance method type: Recordkeeping and reporting

REFERENCE TEST METHOD

Reference test method description: NA

Reference test method citation: NA

MONITORING

Monitoring device type: NA

Monitor location description: NA

Regulated air pollutant being monitored: NA

Generally describe the frequency and duration of sampling and how the data will be reported: NA

RECORDKEEPING

Data (parameter) being recorded: Waste generator, shipper, volume, date received, improperly enclosed or uncovered waste, waste not sealed in leak-tight containers, and the location, depth and area where disposed of

Frequency of recordkeeping (how often data recorded): When shipments are received and disposed of

REPORTING

Generally describe what is reported: Significant amounts of improperly enclosed or uncovered asbestos-containing waste, and discrepancies between shipping records and actual quantities received that could not be resolved within 15 days

Frequency of reporting: Following each reportable observance/occurrence

Beginning date: NA

Figure I-5-6. Compliance Certification Form (method of compliance).

5.8 Ambient NO_x Monitoring

5.8.1 Description

The INEEL is subject to permit requirements under the Idaho Nuclear Technology and Engineering Center Nitrogen Oxides PTC to monitor ambient concentrations of nitrogen oxides (NO_x). This permit was originally issued on May 20, 1988, to address the fuel processing restoration project, which was later canceled.

5.8.2 Requirements

The INEEL must operate and maintain an ambient monitoring network for the measurement of NO_x in accordance with 40 CFR 50 and 58. Specific methods and quality assurance methods should be based on EPA "Quality Assurance Handbook for Air Pollution Measurement Systems," and the INEEL must maintain a monitoring plan, subject to DEQ approval, that describes the installation (dates), quality assurance, and maintenance procedures.

5.8.3 Compliance Methodology

The INEEL has prepared a monitoring plan in accordance with the PTC requirements *(Ambient Nitrogen Dioxide Monitoring Plan for the Idaho National Engineering Laboratory*, DOE/ID-12113, October 1988) and submitted it to the State of Idaho. The INEEL maintains two continuous monitors for NO_x, one located at the experimental field station and one at the junction of Van Buren Boulevard and U.S. Highway 20/26. The INEEL is in compliance with this requirement. A compliance certification form is provided in Figure I-5-7.

5.9 Regulation of Fuels and Fuel Additives

5.9.1 Description

The INEEL is subject to requirements in 40 CFR 80 Regulation of Fuels and Fuel Additives. The INEEL is a wholesale purchaser/consumer as defined in these regulations.

5.9.2 Requirements

The regulation has general requirements that must be met by the INEEL. These requirements include, from section 80.22, the use of nozzle spouts that meet the following: a) terminal end diameter shall not be greater than 0.84 inch, b) terminal end shall have a straight section of at least 2.5 inches, c) the retaining spring shall terminate 3.0 inches from the terminal end, d) fuel is not dispensed at a flow greater than 10 gallons per minute. Section 80.27 requires gasoline used in Idaho to have a vapor pressure that is less than 9.0 psi from May 1 to September 15 of the calendar year. Section 80.29 requires that diesel fuel a) have a sulfur percentage, by weight, no greater than 0.05 percent, b) have a cetane index of at least 40 or a minimum aromatic content of 35 volume percent, and c) be free from the dye solvent red 164 unless it is used in a manner that is tax-exempt as defined under 4082 of the Internal Revenue Code.

5.9.3 Compliance Methodology

A one time inspection and documentation of compliance with nozzle size and pump flow rate has been done by Lenords Petroleum. Specifications for gasoline vapor pressure and diesel fuel will be recorded per the contract with the vendors. A compliance form is shown in Figure I-5-8.

COMPLIANCE CERTIFICATION (METHOD OF COMPLIANCE) FORM

Ambient Nitrogen Oxide Monitoring

REQUIREMENT

Requirement: The permittee shall operate and maintain an ambient monitoring network for the measurement of NO_x. The monitor(s) shall be operated in accordance with 40 CFR 50 and 58. For specific methods and quality control, follow EPA's "Quality Assurance Handbook for Air Pollution Measurement Systems." The permittee will maintain a monitoring plan, subject to DEQ, that which describes the installation (dates), quality assurance, and maintenance procedures.

Requirement basis: INTEC NOx sources PTC-No. 023-0001 as amended, October 18, 1999.

Compliance method type: 2 continuous No_x sources, monitors

REFERENCE TEST METHOD

Reference test method description: (Measurement Method) EPA equivalent to Measurement Principle and Calibration Procedure for the Measurement of Nitrogen Dioxide in the Atmosphere (Gas Phase Chemiluminescence)—fix line weight Monitor Labs Model 8840

Reference test method citation: 40 CFR Appendix F

MONITORING

Monitoring device type: Continuous nitrogen oxide monitors, EPA equivalent to gas phase chemiluminescence

Monitor location description: INEEL—one located at the experimental field station, and one at the junction of Van Buren Blvd. and U.S. Highway 20/26

Regulated air pollutant being monitored: Nitrogen dioxide

Generally describe the frequency and duration of sampling and how the data will be reported: Continuous monitoring reported to the State of Idaho as described in *the Ambient Nitrogen Dioxide Monitoring Plan for the Idaho National Engineering Laboratory*, DOE/ID-12113, October 1988. Nitrogen dioxide (being the main component of Nitrogen oxides) is the pollutant being monitored.

RECORDKEEPING

Data (parameter) being recorded: Equipment calibration and maintenance, and monitoring data

Frequency of recordkeeping (how often data recorded): As required for calibration and maintenance, for monitoring data

REPORTING

Generally describe what is reported: NA

Frequency of reporting: NA

Beginning date: NA

Figure I-5-7. Compliance Certification Form (method of compliance).

COMPLIANCE CERTIFICATION (METHOD OF COMPLIANCE) FORM

Regulation of Fuels and Fuel Additives

REQUIREMENT

Requirement: 1) Fuel nozzles to be proper size, 2) Fuel pump rate not to exceed 10 gpm, 3) Gasoline vapor pressure not to exceed 9.0 psi during May through September, 4) Diesel fuel to sulfur content of less than 0.05%, cetane content of at least 40 or aromatic content or 35 volume percent, and fuel will not contain dye solvent red 164.

Requirement basis: 40 CFR 80 Subpart B

Compliance method type: Recordkeeping

REFERENCE TEST METHOD

Reference test method description: NA

Reference test method citation: NA

MONITORING

Monitoring device type: NA

Monitor location description: NA

Regulated air pollutant being monitored: NA

Generally describe the frequency and duration of sampling and how the data will be reported: NA

RECORDKEEPING

Data (parameter) being recorded: Statement on nozzle size, pump rates of fuel, vendor specification for gasoline vapor pressure and vendor specification for diesel fuel.

Frequency of recordkeeping (how often data recorded): One time for nozzle size and pump rates of fuel. Specifications for gasoline and diesel will be shown in contract with vendors.

REPORTING

Generally describe what is reported: NA

Frequency of reporting: NA

Beginning date: NA

Figure I-5-8. Compliance Certification Form (method of compliance).

6. COMPLIANCE STRATEGY—GENERAL INEEL PROGRAMS

The INEEL is subject to regulatory requirements intended to be applied throughout affected facility or Site operations. The INEEL manages and ensures compliance with these regulations through established programs that are implemented throughout the INEEL. In addition, the INEEL has a Site-wide program to manage prevention of significant deterioration increments. These programs and their applicable requirements are discussed within this section.

6.1 Accidental Release Program—40 CFR 68

These regulations require that sources with a threshold level of a given stored chemical develop risk management plans. The INEEL does not have sources that are at the threshold levels of any of the specified chemicals that require an appropriate risk management plan. The INEEL has also evaluated the general duty clause portion of this regulation. There are programs in place that address potential accidents associated with chemicals. Some of these programs include emergency response personnel, a chemical tracking system, preventive maintenance activities, and formal accident awareness/prevention programs.

6.2 Asbestos Program—40 CFR 61 Subpart M, §61.150

The INEEL has operations subject to certain regulations under 40 CFR 61 Subpart M for Site-wide asbestos abatement program implementation (§61.145), asbestos waste disposal (§61.150), and for specific sources for the active disposal of asbestos-containing materials (§61.154) as discussed in Section 5.7. INEEL activities subject to regulation under §61.145 and §61.150 are implemented Site-wide and therefore are discussed in this section. Although the demolition and renovation standard (§61.145) is not subject to Title V permitting, the INEEL compliance program to meet this standard is briefly described since it is integral to the companion standard for waste disposal (§61.150).

The Clean Air Act required that the EPA develop and enforce regulations to protect the general public from exposure to airborne contaminants known to be hazardous to human health. Asbestos-related activities became subject to regulation on April 6, 1973, under 40 CFR 61, Subpart M, "National Emission Standard for Asbestos" (as revised 55 FR 48406, November 20, 1990). Related Occupational Safety and Health Act rules are intended to control occupational exposure to asbestos, while the NESHAP rules are intended to control asbestos emissions to the atmosphere.

The NESHAP standard for asbestos removal (40 CFR 61.145) addresses notification requirements to EPA and asbestos handling requirements that ensure that each asbestos removal operation will result in "no visible emissions" (i.e., asbestos emissions). There is no numerical emission limit. The "no visible emissions" standard is achieved by proper removal practices and disposal methods, which are detailed in notifications that must be sent to EPA before every job.

INEEL program elements to implement these requirements include the following:

- Notifications to EPA are made prior to all demolitions and qualifying asbestos removal operations, detailing the specific methods to be used for removal, control of emissions, and proper disposal. In general, asbestos removal projects at the INEEL are performed utilizing wet methods. When exceptions to wet removal are required (e.g., when wet methods would endanger workers or damage sensitive equipment), EPA is notified of the specific methods for prior approval.

- Asbestos removals are conducted by qualified asbestos workers, and a NESHAP-trained supervisor is present at all asbestos job sites during removal.

- Asbestos-containing material subject to disposal is packaged in bags or other nonrigid packaging that is dust- and sift-proof and contained in strong, sealed, leak-tight, dust-tight containers.

- The INEEL (Central Facilities Area) Landfill Complex III Extension is used for nonradionuclide-contaminated asbestos disposal.

- Radionuclide-contaminated asbestos is disposed of at the RWMC.

Requirements set forth in §61.150 include (1) no visible emissions, predisposal asbestos packaging requirements, and demolition and management requirements, (2) disposal requirements, (3) transport vehicle marking requirements, and (4) recordkeeping and reporting requirements. The INEEL operates programs to implement these requirements through all asbestos abatement projects and maintains records in facility or Site-wide records management offices. The INEEL is in compliance with this requirement.

6.3 INEEL Area Source Emissions—Fugitive Dust Emission Program—IDAPA 58.01.01.650

Area sources are those air-emitting sources that do not emanate from a stack, vent, or orifice which is amenable to direct control (IDAPA 58.01.01.006). They include particulate and gaseous emissions associated with excavation, material handling, agricultural tillage, and from vehicle travel on both paved and unpaved roads, as well as wind erosion from soils exposed during construction and from exposed storage piles. The INEEL has area sources in each of these categories. Reasonable measures are taken to control fugitive dust emissions through watering of traveled unpaved roads when necessary, covering of trucks as necessary, and other measures appropriate to the situation, and is in compliance with this requirement.

The area source analyses performed to date were done in support of the Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Environmental Impact Statement (DOE/EIS-0203-F, April 1995) and were summarized according to the alternatives of that environmental impact statement (EIS). Resulting concentrations are summarized in that document; however, the emissions data are not presented in the EIS or the related air quality support document (Belanger et al. 1995). The annual totals for fugitive dust (total suspended particulate TSP) attributed to these area source emissions, considering no dust control, are summarized below:

Source Type	TSP[a]
Gravel Pits Excavation and Material Handling	<0.01 ton/yr
Wind Erosion of Exposed Gravel Pits	9.7 ton/yr
Soil Borrow Operations Excavation and Material Handling	<0.01 ton/yr
Wind Erosion of Soil Borrow Operations	6.4 ton/yr
INEEL Landfill Complex Operations at CFA	43.8 ton/yr
RWMC SDA Landfill Operations	2.74 ton/yr
Ready-mix Concrete Plant Operations	5.8 ton/yr
Construction and Demolition	500. ton/yr
Vehicle Travel on Unpaved Roads	182.7 ton/yr
Annual totals for fugitive dust (TSP), all area sources	751.16 ton/yr

a. Assumptions and individual source-specific emissions estimates are in Appendix F.

6.4 Open Burning Program—IDAPA 58.01.01.600 et seq.

The INEEL maintains policies and procedures that prohibit the open burning of materials specified in IDAPA 58.01.01.603 and is in compliance with this regulation. The INEEL may periodically perform allowable burning (e.g., for weed control or training) in accordance with the provisions set forth in IDAPA 58.01.01.606. The INEEL is in compliance with this requirement.

6.5 Ozone-Depleting Substances Program—40 CFR 82

The Clean Air Act established strict standards and requirements on the use of ozone-depleting substances. Title VI of the Clean Air Act requires EPA to develop a complex regulatory program that not only mandates a phaseout of U.S. chlorofluorocarbon and hydrochlorofluorocarbon production, but also requires evaluations of chlorofluorocarbon alternatives and establishes stringent controls on commercial and industrial use of ozone-depleting substances. The following components of Title VI are applicable to operations at the INEEL. The different corporate operators at the INEEL may use different companies to do their training.

6.5.1 40 CFR Part 82 Subpart B, "Servicing of Motor Vehicle Air Conditioners"

40 CFR 82 Subpart B sets forth regulations for the use, recycling, and disposal of listed substances used in motor vehicle air conditioning units. The INEEL has operations that conduct these activities at CFA: CFA-664 and -665.

The key element of Subpart B is the required certification of motor vehicle air conditioner technicians by a qualified EPA training program. The EPA-approved International Mobile Air Conditioning Association training program is designed to ensure that motor vehicle air conditioner technicians are knowledgeable of and can perform all requirements of 40 CFR 82 Subpart B.

The INEEL has been certified by the International Mobile Air Conditioning Association (or other EPA approved association) to train and test motor vehicle air conditioner technicians. This program has certified and will continue to certify the technicians responsible for such maintenance. All INEEL motor vehicle air conditioner technicians working at the INEEL are certified by the International Mobile Air Conditioning Association. The INEEL is in compliance with this requirement.

6.5.2 40 CFR 82 Subpart D, "Federal Procurement"

40 CFR 82 Subpart D sets forth procurement guidelines requiring the federal government to purchase safe alternatives to listed substances to the maximum extent practicable. DOE purchases safe alternatives to the maximum extent practicable, and, therefore, the INEEL is in compliance with this requirement.

6.5.3 40 CFR 82 Subpart E, "The Labeling of Products Using Ozone-Depleting Substances"

40 CFR 82 Subpart E sets forth labeling requirements for products containing listed substances. All containers in which a Class I or Class II substance is stored or transported are required to have an obvious label indicating that an ozone-depleting substance is present. At the INEEL, only trained EPA-certified technicians work with ozone-depleting chemicals that fall within this requirement. INEEL technicians are aware of and perform all labeling requirements, and, therefore, the INEEL is in compliance with this requirement.

6.5.4 40 CFR 82 Subpart F, "Recycling and Emissions Reduction"

40 CFR 82 Subpart F sets forth specific refrigerant recovery and recycling requirements for refrigeration and air conditioning equipment and appliances. Regulations set requirements for the use, recycling, and disposal of listed substances used in refrigeration equipment and prohibits venting of such substances.

The key element of Subpart F is the required certification of air conditioning and refrigeration technicians by a qualified EPA training program. The EPA-approved Air Conditioning Contractors of America training program is designed to ensure that technicians are knowledgeable of and can perform all requirements of 40 CFR 82.

The INEEL has been certified by the Air Conditioning Contractors of America to train and test air conditioning and refrigeration technicians. All air conditioning and refrigeration technicians working at the INEEL are certified by an EPA approved program. The INEEL is in compliance with this requirement.

6.6 PSD—Increment Consumption and Management

6.6.1 Introduction and Background

Certain sources at the INEEL, depending on the date the source became operational and the amount of pollutants the source may emit, are subject to the regulations for PSD. The PSD regulations, in addition to other requirements, limit the deterioration of air quality in areas that are in attainment of the National Ambient Air Quality Standards. The limits are structured as allowable increases (i.e., increments) above baseline conditions. Sources subject to these regulations must be analyzed to track the amount of the allowable increment consumed due to all sources in the area that are subject to the PSD requirements. Increments have been established for the following areas:

- All "ambient air" locations (that is, areas to which the general public has access) around the INEEL, including the Site boundary and public highways that traverse the Site, are considered Class II areas.

- Craters of the Moon Wilderness Area, which is about 6.6 miles west-southwest of the INEEL, is considered a Class I area and is subject to more stringent increment requirements.

Sources at the INEEL are the major sources in the region that consume increment in these Class I and Class II areas.

In accordance with PSD regulations and guidelines, the amount of the PSD increments consumed by sources constructed at the INEEL since the applicable baseline dates has been estimated (Rood, A. S. April 2000). The purpose, scope, and methodology of the assessment and tracking system have been previously discussed with the State of Idaho DEQ.

6.6.2 PSD Sources and Emission Rates

The sources assessed are those that meet any of the following criteria:

Major modifications—These are based on permit applications submitted to DEQ after the major source baseline dates established by regulation. These regulatory baseline dates are January 6, 1975, for particulate matter and sulfur dioxide, and February 8, 1988, for nitrogen dioxide.

Minor sources—These include all minor sources that became operational after the date the DEQ deemed complete the first major source permit application. These dates are pollutant-specific and have been established as February 18, 1981, for sulfur dioxide and particulate matter, and January 23, 1992, for nitrogen dioxide. All sources that became operational between the minor baseline date and December 31, 1998, are included.

An assessment of PSD increment consumption for air pollutant emission sources at the INEEL was last performed in January 2000 as described in *Prevention of Significant Deterioration/Permit to Construct (PSD/PTC) Application for the INTEC CPP-606 Boilers* (Lane et al. 2000). The PSD application evaluated pollutant increment consumption using modeling protocol ISCST3. The aforementioned PSD evaluation for the CPP-606 boilers also included a CALPUFF modeling evaluation to evaluate long range impact of pollutants from the INEEL on nearby NAAQS Class I areas (e.g., Yellowstone National Park, Grand Teton National Park, and Craters of the Moon National Park) (Rood et al. 2000). In each of these assessments, emissions from the INEEL were re-baselined using updated modeling codes and meteorological data to accurately evaluate the increment consumption by the INEEL. The results from these assessments concluded that the INEEL is within guidelines set by USEPA and DEQ with regard to allowable increment consumption under PSD guidelines.

The emission rates used in the PSD calculations have been estimated as maximum allowable for these sources. Although regulations for PSD stipulate that only actual emission rates be assessed, maximum allowable rates are used in the interest of maintaining operational flexibility. Emissions will be added to or subtracted from the overall INEEL emissions to reflect the status of sources at the time an analysis is run. Credit will be taken for the listed emissions used in previous modeling runs from sources that have ceased to operate, and this credit will be used to offset new emissions.

Specific data on the fraction of total particulate emissions that are of respirable size (i.e., PM-10) are available for only one source (TAN-603-027, a boiler at TAN). For all other sources, particulate matter emissions are assumed to consist entirely of PM-10. Calculations of increment consumption for

PM-10 utilize the baseline dates originally established for total suspended particulates. Thus, results are inherently conservative and tend to overstate the actual impact.

The assessment did not include particulate matter emissions (total or PM-10) from construction or other temporary emission-related activities, for which exclusions are allowed by applicable regulations (specifically, IDAPA 58.01.01.581.03.b).

6.6.3 Increment Consumption Tracking

An increment consumption tracking system for sources that became operational after May 1, 1994, provides a cumulative total of criteria pollutant air emissions. This is not a regulatory requirement, but serves as an administrative measure to ensure that contemporaneous sources are included in future PSD permits. Therefore, as air permitting applicability determinations are made for any INEEL activities that impact air quality, maximum potential air emissions are entered into the tracking system for criteria pollutants. At the time estimated air emissions from a single proposed activity exceed the significance level defined in IDAPA 58.01.01.006.88 or significant contribution defined in IDAPA 58.01.01.006.89, a PSD/PTC would be submitted to the State of Idaho DEQ for review. The cumulative total for applicable air pollutants for all contemporaneous point or fugitive sources in operation at the INEEL (as documented in the increment consumption tracking system) would contribute to the PSD modeling of pollutants.

Air permitting applicability determinations which result in category exemptions in accordance with IDAPA 58.01.01.220 are considered for PSD increment tracking sources. In accordance with IDAPA 58.01.01.581.03.b, total suspended particle emissions from construction or temporary emission-related activities at new or modified facilities are not considered for PSD increment tracking. Only fugitive sources contemporaneous to Site-wide or facilitywide operations are considered for PSD increment tracking.

6.7 Fugitive Radionuclide Emission Program

Fugitive and/or diffuse sources may result in radionuclide emissions at the INEEL. Fugitive emissions result from activities including but not limited to material handling, remedial actions under CERCLA and RCRA, and decontamination and dismantlement activities.

The INEEL has programs to minimize and control fugitive emissions from operations using engineered controls and operating procedures. These include but are not limited to dust control measures (e.g., tarping of contaminated soil and containerizing of contaminated soils in storage), ingress and egress procedures for radiologically contaminated buildings and other areas of radiological contamination, and limitations on intrusive activities (e.g., drilling or excavation) in areas of contamination during periods of excessive wind.

Fugitive radionuclide emissions are subject to regulation under 40 CFR 61 Subpart H, and are subject to the 10 mrem/yr aggregate emission limit for radionuclides discussed in Section 5.5. The INEEL is in compliance with this requirement. Actual emissions from INEEL fugitive sources are in the INEEL Annual NESHAP Report.

7. REFERENCES

Belanger, R., J. Raudsep, and D. A. Ryan, *Technical Support Document for Air Resources, Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs,* DOE/ID-10497, Science Applications International Corporation, Idaho Falls, Idaho, March 1995.

Clawson, K. L., G. E Start, and N. R Ricks, *Climatography of the Idaho National Engineering Laboratory, 2nd Edition, DOE/ID-12118,* National Oceanic and Atmospheric Administration, Air Resources Laboratory, Idaho, December 1989.

Lane, H. S., M. J. Case, C. S. Staley, *Prevention of Significant Deterioration/Permit to Construct (PSD/PTC) Application for the INTEC CPP-606 Boilers,* January 2000.

Minkin, S. C., M. R. Jackson, C. Knutson, P. N. Middleton, B. L. Ringe, R. C. Rope, and R. P. Smith, *INEEL Gravel / Borrow Resources and Compliance Assessment, EGG-FM-1126*, EG&G Idaho, Inc., Idaho Falls, Idaho, July. 1994

Raudsep, J. A., R. Belanger, and D. A. Ryan, *Assessment of Significant Deterioration Increment Consumption for Existing Sources of Emissions at the Idaho National Engineering Laboratory, DOE/ID-10508,* Science Applications International Corporation, Idaho Falls, Idaho, February1995.

Rood, A. S, *Assessment of Prevention of Significant Deterioration Increment Consumption at the Idaho National Engineering and Environmental Laboratory Using CALPUFF-SCREEN Model.* Integrated Earth Sciences, BBWI, April 2000..

U.S. Department of Energy, *Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Environmental Impact Statement,* DOE/EIS-0203-F, April 1995.

U.S. Department of Energy, *Ambient Nitrogen Dioxide Monitoring Plan for the Idaho National Engineering Laboratory,* DOE/ID 12113, October 1988.

U.S. Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors,* AP-42, Fifth Edition, Research Triangle Park, North Carolina, 1998.

Appendix A

Organic Tank Emissions Calculations Methodology

Appendix A

Organic Tank Emissions Calculations Methodology

INEEL storage tanks may be vertical or horizontal, aboveground or underground, and inside or outside of buildings. The majority of the organic liquid storage tanks are vertical with a fixed roof. This type of tank consists of a cylindrical steel shell with a permanently affixed roof, which may vary in design from cone- or dome-shaped to flat. Fixed-roof tanks at the INEEL are typically freely vented.

The INEEL methodology for estimating emissions for organic storage tanks is derived from EPA AP-42, Compilation of Air Emission Factors–Stationary Sources, Section 7.1, "Storage of Organic Liquids." Emissions from tanks occur when the vapor space is 1) pressurized by a change in temperature or pressure, relieving the pressure by "breathing" out of the vent (breathing loss), or 2)when the tank is filled, displacing the vapor out of the tank (working loss). Aboveground tanks are much more susceptible to daily temperature changes, and tank color and paint condition are therefore considered in calculating their emissions.

The INEEL utilizes AP-42, Volume I, Section 7.1 (September 1997) to calculate the emissions from the storage of organic liquids. The INEEL Emissions Inventory System is programmed to perform these calculations. At the request of industry, the EPA redeveloped the complicated calculations to provide for easier calculations and to support the development of an EPA program to calculate storage tank emissions. Although the original calculations are more complex, the INEEL inventory system is programmed with and uses the more complex calculations for the 1999 Inventory Report.

The two types of emissions from fixed-roof, organic storage tanks are breathing loss and working loss. Breathing loss is the expulsion of vapor from a tank through vapor expansion and contraction as a result of changes in temperature and barometric pressure. Breathing loss does not change the liquid level in the tank. Working loss is the combined loss from filling and emptying tank contents. Filling loss comes with an increase of the liquid level in the tank, when the pressure inside the tank exceeds the relief pressure or atmospheric pressure and vapors are expelled from the tank. Emptying loss occurs when air drawn into the tank during liquid removal becomes saturated with organic vapor and expands, thus exceeding the capacity of the vapor space.

The following assumptions standardize the storage tank calculations.

- Daily temperature change of underground tanks and inside tanks is approximately zero, and therefore the breathing loss is also approximately zero.

- Average atmospheric pressure is 12.3 psi.

- Working loss emissions are equal to volume of vapor displaced by fuel during tank filling. The number of times the tank is filled is assumed to be equal to the annual throughput divided by the volume of the tank.

- The maximum fill rates of the tanks were provided by the INEEL Idaho Traffic Division as follows:

  Aboveground tanks: trucks pump at 200 gal/min
  Underground tanks: gravity fed at 100 gal/min
  CFA-754 and TAN-724: self-pumping at 90 gal/min.

Appendix B

Fuel-Burning Engines Emission Calculation Methodology

Appendix B

Fuel-Burning Engines Emission Calculation Methodology

Engines with two fuel types are covered by these calculations. Emissions from these sources include carbon monoxide, hydrocarbons, nitrogen oxides, sulfur oxides, lead, and particulates. The emissions for these sources are estimated based on published emission factors found in EPA's AP-42 Volume I.

The calculated emissions include carbon monoxide, nitrogen oxides, sulfur dioxide, volatile organics, and particulates. These emissions are estimated using published emission factors found in AP-42. The method for estimating emissions was based on fuel consumption. The following steps are required to estimate the emissions from industrial engines:

1. Determine the fuel type

2. Determine engine size (horsepower, cubic inch displacement)

3. Look up emission factors in AP-42 Volume I, (10/96), Table 3.3-1 for small engines and Table 3.4-1 for NO_x, SO_x, CO, NMTOC, Tables 3.4-3 and 3.4-4 for VOCs, and Table 3.4-5 for PM.

Maximum AP-42 emissions are calculated as follows:

(AP-42 factor) (maximum allowed hours) (horsepower)[a] = yearly maximum emissions.

[a] The specific variable is modified for the AP-42 factor.

Appendix C

Boilers, Heaters, and Furnaces Emissions Calculation Methodology

Appendix C

Boilers, Heaters, and Furnaces Emissions Calculation Methodology

The calculated emissions include carbon monoxide, nitrogen oxides, sulfur dioxide, volatile organics, and particulates. These emissions are estimated using published emission factors found in AP-42. The method for estimating emissions is based on fuel consumption. The following steps are required to determine the emissions from boilers, heaters, and furnaces.

1. Determine fuel type (coal, oil, natural gas)
2. Determine boiler capacity (utility, industrial, commercial, residential)
3. Look up emission factor in appropriate AP-42 Volume I, Table 1.3-1
4. Multiply emission factor by fuel consumed and correct units to ton/yr

The emissions are estimated by:

$$\text{emissions} = (\text{fuel flow rate}) \times (\text{emission factor}) \times (\text{conversion factor}) \quad (1)$$

where

emissions	=	long-term emissions in ton/yr or short-term emissions in lb/hr
fuel flow rate	=	total annual fuel flow rate in thousand gallons per year for long-term emissions or thousand gallons per hour for short-term emissions
emission factor	=	emission factor for industrial boilers from *Compilation of Air Pollution Emission Factors, Volume I: Stationary Point and Area Sources* (AP-42), *Section 1.3 Fuel Oil Combustion*, in pounds per 1,000 gallons fuel oil burned (9/98)
conversion factor	=	conversion factor for pounds in a ton (only used for long-term emissions)

Maximum Fuel Consumptions

For fuel-oil-fired boilers the following calculation may be used to determine maximum fuel usage. Manufacturer data may also be used for boilers where available.

$$\text{gal/yr} = (8760 \text{ hours/yr})\ (\text{max lb/hr}) / (7.21 \text{ lb/gal}) \quad (2)$$

where:

max lb/hr = (MCR of steam) (1,000 Btu/lb) /(0.8)(19,400 Btu/lb)

Maximum continuous rating (MCR) = steam lb/hr

Heat content of No. 2 fuel oil = 19,400 Btu/lb

Steam enthalpy = 1,000 Btu/lb

Boiler efficiency (assumed) = 80%

Density of No. 2 fuel oil = 7.21 lb/gal.

Appendix D

Painting Emissions Calculation Methodology

Appendix D

Painting Emissions Calculation Methodology

Emissions estimates associated with painting operations were hand calculated and based on process knowledge of the given operation.

Assumptions:

- 100% of VOCs from paint is emitted
- 15% of paint solids is emitted from spraying activities
- 0% of solids is emitted from brush application activities
- 40% of lacquer thinner and other thinners is evaporated to the atmosphere (60% is disposed of in satellite accumulation areas)
- 10% of mineral spirits solvent is evaporated to the atmosphere (90% is disposed of in satellite accumulation area)
- 90% filter efficiency for particulate in spray booth
- 0% filter efficiency for all volatile organic compounds, as well as for particulate from activities outside the spray booth
- Typical operating schedule (if not provided by operator) is 4 hours/day, 5 days/week, 52 weeks/year, or 1,040 hours per year.

Maximum Emission Estimates

Maximum emission estimates from paint booths are based on the assumption that the average spray gun can spray 2.5 gallons of paint per hour and that 100% of the solvents purchased for paint thinning and brush cleaning are emitted. An emission rate can then be determined in the same manner as for the actual emissions, assuming 8,760 hours of operation.

Appendix E

Radionuclide Emissions Calculation Methodology

Appendix E

Radionuclide Emissions Calculation Methodology

Method I: Destructive and Nondestructive Assessment of Filter Media

This methodology determines the curies deposited on a given set of filter media (e.g., high-efficiency particulate air filters). Knowing the time period that the filter media are in service, an estimate of the average curie release rate (in curies per year) is easily determined. Methods IA and IB are applicable only to particulate emissions. Nonparticulate emissions (if any) must be measured using another method.

Method IA: Destructive Assessment

Destructive assessment involves taking a core sample from the filter media. This sample is then analyzed in a radiological laboratory to determine the curies found on the core sample. Knowing the surface area of the core sample and the total surface area for the filter bank, the total curies prior to filtration are determined. To determine the curies released to the environment, we multiply by the appropriate mitigation factor.

Assumptions:

- Core sample is representative of the filter bank media
- Releases have been uniform over the life of the filter
- Half-lives of all isotopes are sufficiently long as compared to the time the high-efficiency particulate air filter bank is in service. If not, emissions will have to be adjusted to account for decay losses of the shorter-lived radionuclides. If the distribution of nuclides is not fairly constant over time, decay correcting may not be possible.

Calculations:

$$\text{Curies released per year} = \text{sample} * \left(\frac{\text{area}_{\text{filter media}}}{\text{area}_{\text{core sample}}}\right) * \left(\frac{1}{\text{efficiency}}\right) * \left(\frac{1}{\text{time}}\right) * \text{mitigation factor} \qquad (3)$$

where

sample	=	The curies found on the core sample as obtained from the radiological laboratory.
$\text{area}_{\text{filter media}}$	=	The surface area of the filter media found in the filter bank.
$\text{area}_{\text{core sample}}$	=	The surface area of the core sample.
efficiency	=	The efficiency of the filter media is included to account for the curies that passed through the filter media. In many cases this may be ignored when the efficiency approaches unity (i.e., 0.9997 for a high-efficiency particulate air filter).

time	=	To convert the releases to a per annum basis, divide by the time (in years) that the filter media was online.
mitigation factor	=	If calculating the actual releases to the environment, use the appropriate mitigation factor. The mitigation factor equals 1 minus the efficiency. For uncontrolled releases this factor is not applicable.

Method IB: Nondestructive Assessment

This technique is similar to the above destructive assessment technique except that the filter bank curie loading is determined using nondestructive techniques. By measuring external radiation fields and accounting for the geometry and shielding properties of the filter system, the curie loading is determined. In many cases the loading is determined using shielding codes such as Microshield for curie to exposure rate or dose rate conversion factors. To determine the curies released to the environment, multiply by the appropriate mitigation factor.

Assumptions:

- Field survey locations are representative for the filter bank media
- Distribution of radionuclides is known
- Geometry, shielding, and distance properties are adequately addressed by the dose- to-curie conversion computer code or model.

Calculations:

$$\text{Curies released per year} = \text{radiation} * \text{conversion factor} * \left(\frac{1}{\text{efficiency}}\right) * \left(\frac{1}{\text{time}}\right) * \text{mitigation factor} \quad (4)$$

where

radiation	=	The radiation field as measured by a portable radiation detector or instrument taking into account efficiency of the detector or instrument.
conversion factor	=	This factor converts the gamma radiation field measurements to the total curie loading (α and β/γ emitters) found on the filter media. Normally shielding codes (e.g., Microshield) are used to take into account geometry, shielding and distance effects.
efficiency	=	The efficiency of the filter media is included to account for the curies that passed through the filter media. In many cases this may be ignored when the efficiency approaches unity (i.e., 0.9997 for a high-efficiency particulate air filter.
time	=	To convert the releases to a per annum basis, divide by the time (in years) that the filter media was online.

mitigation factor	=	If calculating the actual releases to the environment, use the appropriate mitigation factor. The mitigation factor equals 1 minus the efficiency. For uncontrolled releases this factor is not applicable.

Method II: Possession Quantity Techniques

This methodology evaluates the total curies processed or possessed at a facility for the period under consideration. A resuspension factor is then applied to determine the releases to the facility environment. This resuspension factor is normally determined by evaluating the physical state of the radionuclide(s) in question. To determine the curies released to the environment, multiply by the appropriate mitigation factor.

Assumptions:

- Period of time for which total curies are tabulated is representative for the entire year
- Resuspension factor is known for each radionuclide in question.

Calculations:

$$\text{Curies released per year} = \text{curies} * \text{resuspension factor} * \left(\frac{1}{\text{time}}\right) * \text{mitigation factor} \qquad (5)$$

where

curies	=	The total curies possessed or processed for a given period of time are entered.
resuspension factor	=	This dimensionless factor relates the amount of material that resuspends or goes airborne to the amount in process, on surfaces, or in some other immobile form. In most cases its value depends on the physical state of the radionuclide(s) in question.
time	=	To convert the releases to a per annum basis, divide by the time (in years) that the radioactive material was possessed or processed in the facility.
mitigation factor	=	If calculating the actual releases to the environment, use the appropriate mitigation factor. The mitigation factor equals 1 minus the pollution control equipment efficiency. For uncontrolled releases this factor is not applicable.

Method III: Level-of-Effort Techniques

This methodology is similar to the annual possession quantity technique except that curies released from the facility are determined by tracking another variable or level of effort. For example, curies released in an analytical laboratory are tracked by the number of sample analyses. Normally, the activity released per level of effort is determined by sampling data or one of the other methods. To determine the curies released to the environment, multiply by the appropriate mitigation factor.

Assumptions:

- Level-of-effort constant has been adequately determined, and process can be tracked using this level of effort
- Period of time for which the level of effort was tabulated is representative for the entire year.

Calculations:

$$\text{Curies released per year} = \text{level of effort} * (\frac{1}{\text{time}}) * \text{mitigation factor} \quad (6)$$

where

level of effort	=	A factor is established that equates a certain level of effort to releases of radionuclides within the facility. For example, curies released per sample analysis.
time	=	To convert the releases to a per annum basis, divide by the time (in years) for which we counted our level of effort.
mitigation factor	=	If calculating the actual releases to the environment, use the appropriate mitigation factor. The mitigation factor equals 1 minus the pollution control equipment efficiency. For uncontrolled releases this factor is not applicable.

Method IV: Grab and Continuous Sampler Techniques

In some cases, a sample may be collected and analyzed to determine the concentration of radionuclides. This may include both measurements upstream and downstream of any pollution control equipment. These grab and continuous sampler calculation techniques should not be confused with continuous compliance monitoring performed in accordance with 40 CFR §61.93.

Method IVA: Exhaust Duct Sampling

This method involves collecting a sample from an exhaust duct. The sample is analyzed to determine the concentration of radionuclides on the sample. Multiplying this concentration by the stack flow rate to system flow rate ratio, we arrive at the release rate in curies (for a given period of time). If this sample is taken upstream of any pollution control equipment, multiply by the appropriate mitigation factor to determine the curies released to the environment.

Assumptions:

- Sample is drawn from a representative location or a location that provides a specified type of sample
- Period of time during which the sample was drawn is representative for the entire year
- The ratio of stack to sample flow rate is constant, and this constant is known
- Sampling system collects and transmits a reasonably representative sample.

Calculations:

$$\text{Curies released per year} = \text{sample} * \left(\frac{\text{flowrate}_{\text{exhaust}}}{\text{flowrate}_{\text{sample}}}\right) * \left(\frac{1}{\text{time}}\right) * \text{mitigation factor} \quad (7)$$

where

sample	=	The curies found in the sample obtained in the sampling apparatus.
$\text{flowrate}_{\text{exhaust}}$	=	The average flow rate of the entire exhaust system or stack.
$\text{flowrate}_{\text{sample}}$	=	The average flow rate for the sample apparatus or monitor.
time	=	To convert the releases to a per annum basis, divide by the time (in years) that the sample was taken.
mitigation factor	=	If the sample was taken upstream from a pollution control device, multiply by the appropriate mitigation factor to calculate the actual releases to the environment. If the sample was taken downstream from a pollution control device, multiply by the inverse of the appropriate mitigation factor to calculate the uncontrolled releases. The mitigation factor equals 1 minus the pollution control equipment efficiency.

Method IVB: Room Air Sampling

This method involves collecting a sample (or samples) from the room(s) where the operation is occurring. The sample is analyzed to determine the curies of radionuclides on the sample. Knowing the volume of the sample collected, the concentration of radionuclides in the room air can be calculated. Multiplying this concentration by the room air exhaust rate, the release rate in curies is obtained (for a given period of time). To determine the curies released to the environment, the sum is multiplied by the appropriate mitigation factor.

Assumptions:

- Sample is drawn from a representative location
- Period of time during which the sample was drawn is representative for the entire year
- Room air exhaust rate is known.

Calculations:

$$\text{Curies released per year} = \text{sample} * \left(\frac{1}{\text{sample}_{\text{volume}}}\right) * (\text{exhaust}) * \text{mitigation factor} \quad (8)$$

where

sample	=	The curies found in the sample obtained in the sampling apparatus.
$\text{sample}_{\text{volume}}$	=	The volume of air that was collected.

exhaus*t*	=	The room air exhaust rate (per year)
mitigation factor	=	Multiply by the appropriate mitigation factor to calculate the actual releases to the environment. The mitigation factor equals 1 minus the pollution control equipment efficiency.

Appendix F

Fugitive Dust Emissions

Appendix F

Fugitive Dust Emissions

INEEL Area Source Emissions Inventory—Fugitive Dust Sources

Fugitive dust emissions are associated with the excavation process as materials are removed from the ground and are transferred to haul vehicles or crushers. This activity currently occurs at INEEL gravel pits and soil borrow areas, and at the INEEL landfill.

1. **Gravel Pits:** Seven existing active gravel pits are described in a 1995 survey by Minkin et al., in which historical and planned activity rates [by project-related need, expressed as a 10-year (1995-2005) forecast] are provided. Ten-year totals and annual emissions (assuming average use per year) for each gravel pit are as follows:

TAN Gravel Pit	12,650 cubic yards, <0.01 ton/yr
Lincoln Boulevard Gravel Pit	21,383 cubic yards, <0.01 ton/yr
NRF Gravel Pit	2,550 cubic yards, <0.01 ton/yr
TRA Gravel Pit	62,333 cubic yards, <0.01 ton/yr
CFA Gravel Pit	67,433 cubic yards, <0.01 ton/yr
BORAX Gravel Pit	78,850 cubic yards, <0.01 ton/yr
RWMC Gravel Pit	420,650 cubic yards, <0.01 ton/yr

Particulate emissions from gravel pit operations can be estimated using the load in/load out formula:

EF(lb TSP/ton material handled) = 0.0018 (s/5)(U/5)/[(M/2)**2) (Y/6)] (9)

where

s = silt content = 10

U = mean wind speed (mph) = 7.5

M = surface moisture percentage = 15

Y = effective loader capacity (y^3) = 2

EF = emission factor

Particulate emissions from wind erosion of exposed gravel pits can be calculated using the following formula:

EF(lb TSP/acre-year) = 3400 (e/50) (s/15) (f/25)/[(PE/50)**2] (10)

where

EF = emission factor

e = surface erodability = 3

s = silt content = 10

f = % wind speed exceeds 12 mph = 14

PE = precipitation evaporation index = 38

Acreage for each gravel pit site can be calculated using GIS data presented by Minkin et al., (1995), in Figures 2 through 24 of that reference. Annual wind erosion emissions for each gravel pit are:

TAN Gravel Pit	25.7 acres, 1.7 ton/yr
Lincoln Boulevard Gravel Pit	31.7 acres, 2.1 ton/yr
NRF Gravel Pit	3.7 acres, 0.2 ton/yr
TRA Gravel Pit	15.4 acres, 1.0 ton/yr
CFA Gravel Pit	11.9 acres, 0.8 ton/yr
BORAX Gravel Pit	28.9 acres, 1.9 ton/yr
RWMC Gravel Pit	29.3 acres, 1.9 ton/yr

2. **Soil Borrow:** Soil and clay requirements for INEEL projects are also described by Minkin et al., (1995) in which historical and planned activity rates [by project-related need, expressed as a 10-year (1995-2005) forecast] are provided. The ten-year soil borrow total is:

RWMC Spreading Area B: 1,958,884 cubic yards, <0.01 ton/yr

Particulate emissions from soil borrow operations can be estimated using the load in/load out formula provided above, with applicable silt fraction.

EF(lb TSP/ton material handled) = 0.0018 (s/5)(U/5)/[(M/2)**2) (Y/6)] (11)

where

EF = emission factor

s = silt content = 30

U = mean wind speed (mph) = 7.5

M = surface moisture percentage = 20

Y = effective loader capacity (y^3) = 2

Acreage for the "RWMC Spreading Area B" site can be calculated using data for the Site presented by Minkin et al. (1995), in Figure 26. Particulate emissions from wind erosion of "RWMC Spreading Area B" can be calculated using the following formula:

EF(lb TSP/acre-year) = 3400 (e/50) (s/15) (f/25)/[(PE/50)**2] (12)

where

EF	=	emission factor
e	=	surface erodability = 10
s	=	silt content = 30
f	=	% wind speed exceeds 12 mph = 14
PE	=	precipitation evaporation index = 38

RWMC Spreading Area B	6.4 acres, 21 ton/yr

3. **Landfill Complex:** Fugitive emissions resulting from wind erosion and material handling at the INEEL landfill complex at CFA and the SDA landfill are discussed below:

Particulate emissions from wind erosion of exposed areas and from material handling are estimated using the same assumptions and formulae as those provided in the section on gravel pits of this appendix. The material handled is also the same.

INEEL Landfill Complex at CFA

The average amount of material handled and the estimated annual handling emissions of fugitive dust are:

INEEL Landfill Complex at CFA	161,000 cubic yards	0.037 ton/yr

The maximum expected exposed area and the estimated fugitive dust emissions from wind erosion of exposed areas are:

INEEL Landfill Complex at CFA	78.5 acres	1.71 ton/yr

Fugitive dust arising from vehicle travel on unpaved roads at the INEEL Landfill Complex at CFA can be calculated using the formula given in “Vehicle Travel on Unpaved Roads” of this appendix.

where

s	=	silt = 10%
S	=	vehicle speed = 10 mph
W	=	average vehicle weight = 18 tons
d	=	dry days = 345

The estimated annual vehicle miles traveled on unpaved roadways at the INEEL Landfill Complex at CFA and the estimated annual TSP emissions are:

INEEL Landfill Complex at CFA	12500 VMT	42.1 ton/yr

RWMC SDA Landfill

The average amount of material handled and the estimated annual handling emissions of fugitive dust are:

SDA Landfill	1,452 ton/yr of material handled 1.18 ton/yr fugitive dust

The maximum expected exposed area and the estimated fugitive dust emissions from wind erosion of exposed areas are:

SDA Landfill	0.2 acres	0.12 ton/yr

Fugitive dust arising from vehicle travel on unpaved roads at the SDA Landfill can be calculated using the formula given in "Vehicle Travel on Unpaved Roads" of this appendix.

where

s = silt = 15%

S = vehicle speed = 15 mph

W = average vehicle weight = 20 tons

D = dry days = 345

The estimated annual vehicle miles traveled on unpaved roadways at the SDA Landfill and the estimated annual TSP emissions are:

SDA Landfill	168 VMT	1.34 ton/yr

4. **Material Handling:** Fugitive emissions resulting from material handling at gravel pits are addressed above. Loading and unloading at the CFA concrete batch plant is not encompassed in those data.

Fugitive particulate (total suspended particulate) emissions for a generic ready-mix concrete plant of 40,000 y^3 concrete per year are available in the EPA Compilation of Air Pollutant Emission Factors, AP-42 (EPA 1988). These emissions may be scaled to the operating capacity of the INEEL batch plant. Fugitive particulate emissions for the 40,000 y^3 case are:

Sand and Aggregate Storage	2.0 tpy
Sand Transfer	1.3 tpy
Cement Unloading	0.9 tpy
Weigh Hopper Emissions	0.8 tpy
Truck Loading (Transit mix)	0.8 tpy
Total	5.8 tpy

Wind erosion from uncovered aggregate storage piles is addressed in this emission factor.

No asphalt batch plants are currently contemplated for the INEEL.

5. **Agricultural Operations:** No agricultural operations involving soil tilling exist or are contemplated at the INEEL. The eastern perimeter of the INEEL is utilized for cattle and sheep grazing on a closely controlled access basis. No soil tilling operations are associated with this grazing.

   The experimental field facility, formerly known as the experimental dairy farm, was used historically (through 1969) for production of hay and feeding of dairy stock involved in controlled tests of radioiodine uptake. No soil tilling operations are currently associated with or are planned for this facility.

6. **Road Construction:** No road construction involving new rights-of-way is contemplated for the INEEL, although resurfacing of asphalt roads will continue on a scheduled basis. Fugitive emissions for road resurfacing activities can be addressed using right-of-way size and activity factors for equipment, taking into account blowoff from uncovered loads, where that occurs.

7. **Construction and Demolition:** Construction-related fugitive dust pollutant emission rates are presented for all planned INEEL projects (including decontamination and dismantlement) in Tables 7-1 and 7-2 of the Air Quality Technical Support Document for the INEEL Spent Fuel and Environmental Restoration/Waste Management EIS (Belanger et al. 1995). Belanger presents hourly and annual emission rates, for various EIS alternatives, for which the scheduling is provided elsewhere in the EIS. Copies of these tables are provided at the end of this appendix.

8. **Vehicle Travel on Unpaved Roads:** Fugitive dust arising from vehicle travel on unpaved roads was not reported explicitly in the Air Quality Technical Support Document for the INEL Spent Nuclear Fuel & Environmental Restoration/Waste Management EIS (Belanger et al., 1995), although it was included in the summarized emissions and modeling results presented there. Unpaved road vehicle travel is based on 300 working days per year, and 290 vehicle miles traveled (VMT) per day, primarily security patrol and natural resource characterization vehicles. This section excludes vehicle traffic on unpaved roads in the INEEL Landfill Complex at CFA (see number 3 of this appendix).

The particulate emissions may be calculated using

EF (lb TSP/vehicle mile traveled) = 5.9 (s/12)(S/30) [(W/3)**0.8) (d/365)] (13)

where

EF	=	emission factor
s	=	silt content = 15
S	=	vehicle speed (mph) = 25
W	=	average vehicle weight (tons) = 2
d	=	dry days = 345

Annual INEEL unpaved road traffic, excluding the SDA landfill and INEEL landfill complex at CFA, is estimated at 87,000 VMT. The annual TSP emissions are 182.7 tpy.

9. **Blowoff from Loads in Transit:** Blowoff from loads of aggregate hauled in support of road resurfacing or sand and gravel movement should be addressed in permitting road construction projects.

Appendix G

Process Equipment Sources Subject to IDAPA 58.01.01.700 et. seq.

Appendix G

Process Equipment Sources Subject to IDAPA 58.01.01.700 et seq.

Table I-G-1. Process equipment sources subject to IDAPA 58.01.01.700 et seq.

Identifier	Source type	Actual particulates (ton/yr[a])
CPP-620-004	Pilot plant	0.00
CPP-620-005	Pilot plant	4.5E-05
CPP-620-006	Pilot plant	0.00
CPP-620-009	Building exhaust	0.00
CPP-637-032	Pilot plant	9.8E-06
CPP-637-035	Pilot plant	0.00
CPP-637-036	Pilot plant	0.00
CPP-637-037	Pilot plant	0.00
CPP-637-042	Pilot plant	0.00
CPP-637-044	Pilot plant	0.00
CPP-708-001	Main stack	7.3E-07
TAN-604-035	Grinder fume hood	0.00
TAN-606-005	Sawdust particulate	1.8E-01
TAN-629-012	Manufacturing process	1.6E-05
TAN-629-014	Manufacturing process	1.2E-05

a. Process equipment sources subject to regulation under IDAPA 58.01.01.701 through .703 were selected from information listed in the Air Emission Inventory for the Idaho National Engineering Laboratory–1999 Emissions Report [DOE/ID-10437(93), Appendix B]. Sources listed under the particulate emission category were screened based on the description of the source type for applicability. Fuel burning sources, exempt from .701 through .703, were removed from the list of applicable sources. Similarly, storage tanks sources, fugitive sources, chemical sources, the firing range, and road sources were removed from the list since they do not readily meet the definition of a process or process equipment as defined in IDAPA 58.01.01.006.78. Particulate emissions are based on the Air Emission Inventory for the Idaho National Engineering Laboratory – 1999 Emissions Report," DOE/ID-10788, May 2000.

Appendix H

INEEL Air Permits

Appendix H

INEEL Air Permits

All air permits have been issued by the Idaho DEQ and have the same permit # of 023-00001 except as noted.

BBWI

Specific Manufacturing Capabilities (SMC) Project, 7-28-00

Boiler for Spaceheating at CFA 609 HQ/SRT Building, 12-5-95

Idaho Nuclear Technology and Engineering Center, Nitrogen Oxide Sources, 10-18-99

Building CPP-606 Distillate Oil-Fires Boilers and INTEC Distillate Oil-Fired Portable Boiler PSD PTC, 6-26-00

Idaho Chemical Processing Plant Pilot Plants, 8-8-96

CPP-1619, Waste Storage Facility, 3-4-98

New Waste Calcining Facility/Decontamination Area, 12-17-97 (has not started)

Fuel Storage Area–CPP-666 Rack Reconfiguration Project, 4-5-96

Transuranic Storage Area Retrieval Enclosure, 10-13-00

TAN 603-PBF-76-98, Fuel Oil Fired Boilers #4 and #5, 5-14-98

TRA Evaporation Pond, 12-13-95

TAN-734-001 (Dewatering/Drying), 10-17-00

NRF

Expended Core Facility (ECF) Dry Cell at the Naval Reactors Facility (NRF), #023-00001, 2-9-00

Idaho Nuclear Technology and Engineering Center, Nitrogen Oxide Sources, 10-18-99

ANL-W

Fuel Conditioning facility, #011-00022, 6-26-00

Sodium Process Facility, #011-00022, 9-26-00

Utility Paint Spray booth, #0140-0022, 8-23-93

Idaho Nuclear Technology and Engineering Center, Nitrogen Oxide Sources, 10-18-99

BNFL, Inc.

Advanced Waste Treatment facility, 7-19-00