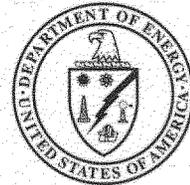


**7.1.2 NESHAPS
Monitoring Plan**

DOE/ID-11016
Revision B
September 12, 2002



U.S. Department of Energy
Idaho Operations Office

***National Emission Standards for Hazardous
Air Pollutants Monitoring of the OU 7-10
Glovebox Excavator Method Project***

PROJECT FILE NO. 021052



Idaho National Engineering and Environmental Laboratory

**National Emission Standards
for Hazardous Air Pollutants Monitoring
of the OU 7-10 Glovebox Excavator Method Project**

September 12, 2002

**Prepared for the
U.S. Department of Energy
Idaho Operations Office**

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ABSTRACT

This report presents the applicable quality requirements for sampling, analysis, and reporting of particulate radionuclide emissions data. This report is the quality assurance project plan that will apply to the particulate material sampling system used to collect samples of air emissions during OU 7-10 Glovebox Excavator Method Project operations. The record sampling system will be installed to comply with the National Emission Standards for Hazardous Air Pollutants (NESHAP) monitoring and reporting requirements. The report briefly reviews the operational objectives and major activities planned for the project. It also discusses how specific requirements will be implemented at OU 7-10. The responsibilities of each organization involved with the project, including the Maintenance Department; Analytical Laboratories Department; Environmental Affairs Directorate; and Bechtel BWXT Idaho, LLC Quality Assurance Department, are explained in detail. Specific data quality objectives are listed. These issues are addressed to ensure that measurements of radioactive particulate material emissions from the OU 7-10 project are acceptable for compliance with the NESHAP.

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ACRONYMS

ACFM	actual cubic feet per minute
ANSI	American National Standards Institute
BBWI	Bechtel BWXT, LLC
CFR	<i>Code of Federal Regulations</i>
DOE	U.S. Department of Energy
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
HVAC	heating, ventilation, and air conditioning
INEEL	Idaho National Engineering and Environmental Laboratory
MCP	management control procedure
NESHAP	National Emission Standards for Hazardous Air Pollutants
NIST	National Institute of Standards and Technology
OU	operable unit
QA	quality assurance
QAPjP	quality assurance project plan
QC	quality control
RCS	Retrieval Confinement Structure
RSD	relative standard deviation
RWMC	Radioactive Waste Management Complex
SS	shift supervisor
WES	Weather Enclosure Structure

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National Emission Standards for Hazardous Air Pollutants Monitoring of the OU 7-10 Glovebox Excavator Method Project

1. INTRODUCTION

1.1 Purpose and Scope

This quality assurance project plan (QAPjP) was developed to implement the National Emission Standards for Hazardous Air Pollutants (NESHAP) Method 114 (40 CFR 61 2002) quality requirements for emissions monitoring at the Operable Unit (OU) 7-10 (also called Pit 9) Glovebox Excavator Method Project. This plan also implements the requirements of U.S. Department of Energy (DOE) Order 5400.1, "General Environmental Protection Program." The purpose of this QAPjP is to ensure that applicable quality requirements are identified and met during sample collection, analysis, and reporting of particulate radionuclide emissions data. Where applicable, established Glovebox Excavator Method Project and companywide procedures are used to provide instruction for common activities such as establishing chain of custody and performing audits.

This QAPjP applies to the sampling system used to collect samples during Glovebox Excavator Method Project operations. This sampling system is referred to as the record sampling system, which will be installed to comply with NESHAP monitoring and reporting requirements. The record sampling system is independent of the continuous stack monitoring system that also is used to sample the project stack. The continuous stack monitoring system will be used to measure airborne emissions of radioactive material in real time. This plan does not apply to continuous air monitoring.

1.2 Location

The Glovebox Excavator Method Project will be conducted at OU 7-10 in the Subsurface Disposal Area of the Radioactive Waste Management Complex (RWMC) at the Idaho National Engineering and Environmental Laboratory (INEEL) near Idaho Falls, Idaho. The INEEL is near the western edge of the Upper Snake River Plain in southeastern Idaho. The RWMC encompasses 0.76 km² (187 acres). The elevation at OU 7-10 is 1,527 m (5,010 ft) above sea level. The RWMC is located in Butte County approximately 27.5 km (16.5 mi) southeast of Arco, Idaho, in Section 18, T2N, R29E. The locations of the RWMC and OU 7-10 are indicated in Figures 1 and 2, respectively.

1.3 Background

The Glovebox Excavator Method Project was established to demonstrate retrieval of waste zone material from OU 7-10, provide information on any contaminant of concern that may be present in the underburden, characterize waste zone material for safe and compliant storage, and package material in containers acceptable to the Advanced Mixed Waste Treatment Facility. The project will provide information supporting a remedial decision for the RWMC, which was designated as Waste Area Group 7 under the Federal Facility Agreement and Consent Order (DOE-ID 1991) and the Comprehensive Environmental Response, Compensation, and Liability Act (42 USC § 9601 et seq. 1980). The U.S. Department of Energy Idaho Operations Office, the State of Idaho, and the U.S. Environmental Protection Agency (EPA) jointly developed the process for remediating OU 7-10. The Glovebox Excavator Method Project is the first retrieval operation in this process.

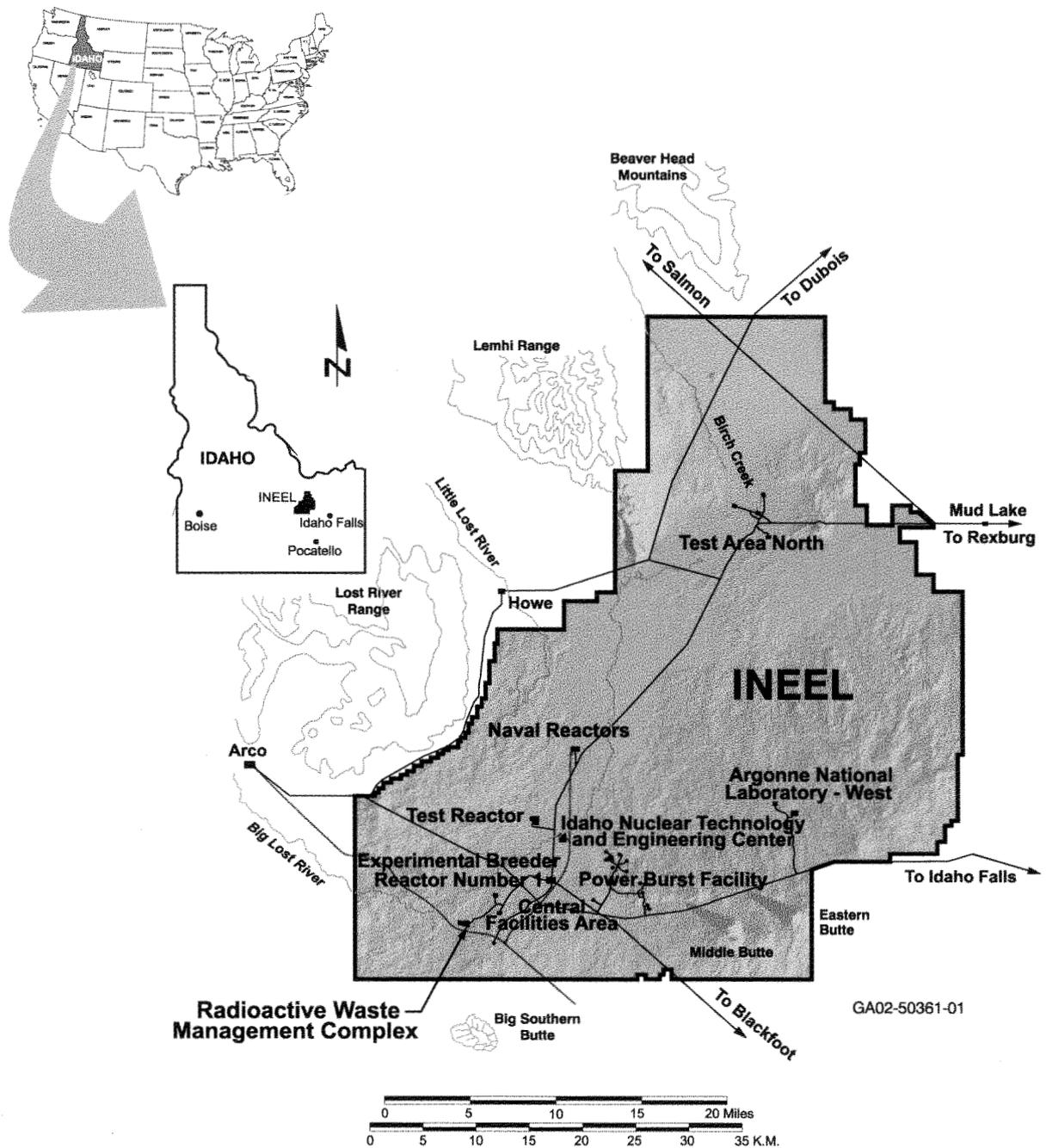


Figure 1. Map of the Idaho National Engineering and Environmental Laboratory showing the location of the Radioactive Waste Management Complex.

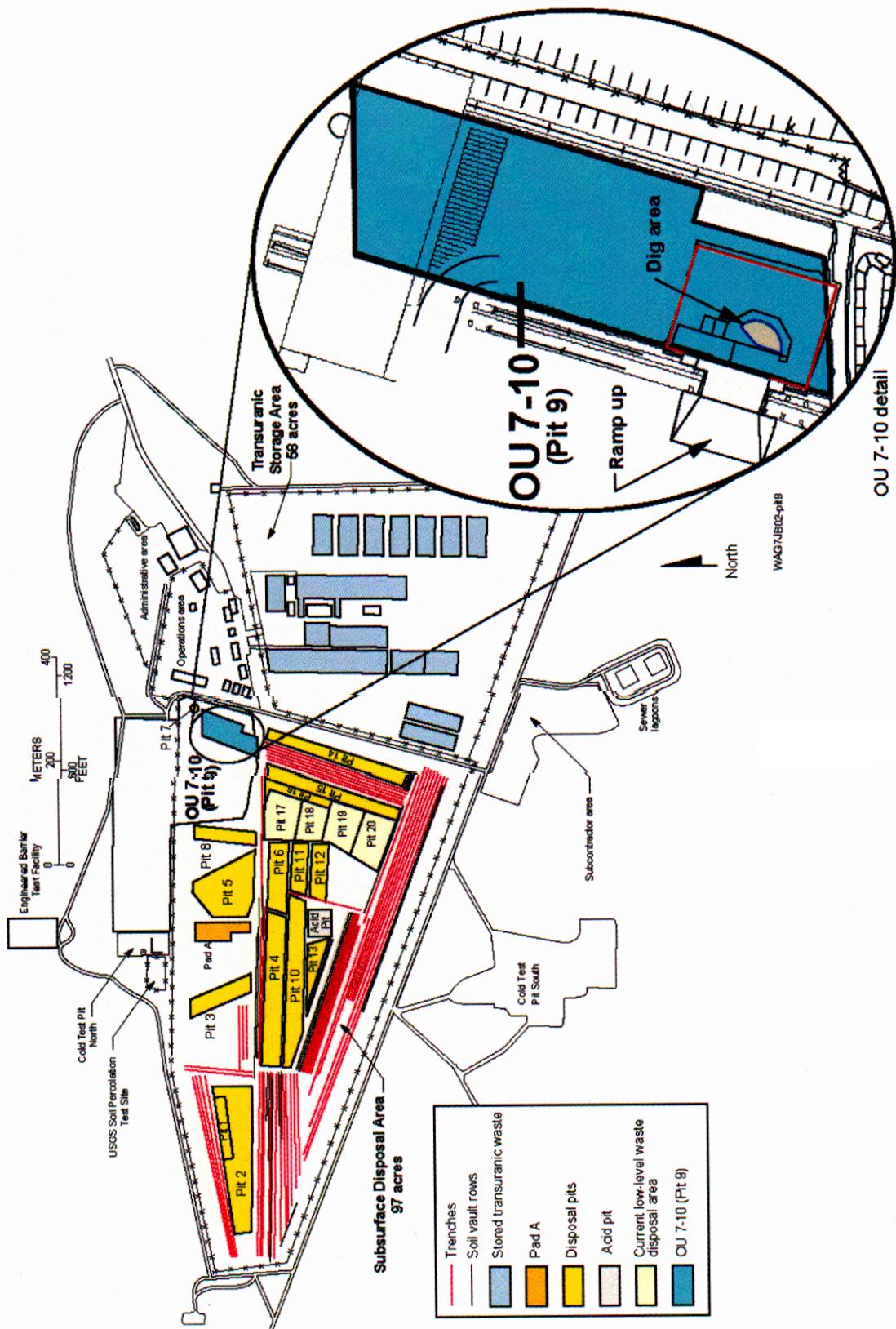


Figure 2. Map of the Radioactive Waste Management Complex showing the location of Operable Unit 7-10.

The operational objectives of the project include the following:

- Retrieve waste zone material rapidly and cost effectively
- Prevent cross contamination of waste zone material in overburden soil
- Dispose of all materials excavated by the project to prevent creating legacy waste
- Return the excavated area and facility to a safe condition.

The four major activities planned at OU 7-10 for Glovebox Excavator Method Project operations include the following:

1. Remove and stage the overburden
2. Retrieve and sample the waste zone material
3. Sample the underburden beneath the waste zone material
4. Close the excavated area of the pit.

Further details and the schedule for remediating OU 7-10 were reached in the April 2002 Agreement to Resolve Disputes (DOE 2002).

Operations consist of all tasks performed to excavate, retrieve, sample, package, handle, assay, and store the soil and waste zone material in the designated portion of OU 7-10, as described in the *OU 7-10 Glovebox Excavator Method Project Execution Plan* (INEEL 2002a). Overburden removal includes activities beginning with retrieval of overburden soil through temporary staging of the material. The overburden will be returned to OU 7-10 after waste zone material retrieval has been completed. Overburden removal will be completed before retrieving waste zone material to prevent contaminating overburden soil. The retrieval process will start with excavation of waste zone material and proceeds through packaging and interim storage. After retrieval is complete, samples of underburden material will be collected for characterization. The pit closure phase will include stabilizing and filling the pit volume with overburden soil, followed by emplacement of weak grout to leave the facility in a safe shutdown condition.

Once begun, project operations will continue nonstop until completed. Four crews working shifts of 12-hour days, 4 days on and 4 days off, will conduct the operations. Approximately 57 to 96 m³ (75 to 125 yd³) of waste zone material and interstitial soil will be retrieved and placed in approximately 300 to 400 drums. The actual quantity of drummed material generated by the project will depend on the angle of repose that the waste zone material sustains.

1.4 Objective of the National Emissions Standards for Hazardous Air Pollutants Monitoring Program for the Glovebox Excavator Method Project

The objective of the NESHAP Monitoring Program for the OU 7-10 Glovebox Excavator Method Project Retrieval Confinement Structure (RCS) heating, ventilating, and air conditioning (HVAC) stack is to generate data of appropriate quality to serve as a record of emissions for NESHAP compliance. To this end, representative samples of particulate emissions will be collected and analyzed for radioactive

material, and integrated stack flows will be measured during each sampling period. These measurements will be performed in accordance with American National Standards Institute (ANSI) Standard N13.1-1999, "American National Standard Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities," as required by the NESHAP.

The RCS emissions monitoring program uses an INEEL laboratory for the analysis of filter samples. The laboratory operates under the approved "Quality Assurance Project Plan for the Analytical Laboratories Department Radioanalytical Section" (PLN-153) and controlled standard operating procedures.

1.4.1 National Emission Standards for Hazardous Air Pollutants Requirements

The NESHAP limits the amount of radionuclides released into the ambient air from the INEEL to an amount that would result in an effective dose equivalent of 10 mrem/yr to any member of the public. Compliance with the dose standard must be demonstrated using annual emission estimates and the dose assessment codes listed in the NESHAP. The NESHAP also requires continuous sampling if the unabated emissions from a source could cause greater than 0.1 mrem/yr to a member of the public. The samples must be analyzed for at least those radionuclides that could contribute greater than 10% of the potential effective dose equivalent. If released without abatement, emissions of particulate^a radioactive material from the retrieval operations could cause a greater than 0.1 mrem/yr dose to a member of the public (Abbott 2002), so continuous record sampling must be performed in accordance with 40 *Code of Federal Regulations* (CFR) 61, Appendix B, Method 114. The samples must be analyzed for Am-241 and Pu-239, which each cause over 10% of the total estimated dose. Analyses for other radionuclides (e.g., gamma spectrometric analysis or Sr-90 radiochemical analysis) will be performed as a best management practice.

Method 114 specifies stack monitoring and sample collection methods, radionuclide analysis methods, and quality assurance (QA) methods for monitoring programs that are conducted for NESHAP compliance. Method 114 incorporates by reference ANSI N13.1-1969, "American National Standard Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities," which was updated and superseded by a revision released in May 1999 (referred to here as ANSI 99). The 1969 version of ANSI N13.1 (referred to here as ANSI 69) is no longer endorsed by the ANSI, but the EPA has not completed its review of ANSI 99 and has not determined whether all or only part of the new standard will be required under the new regulations. The EPA regulations will be modified to account for the ANSI 99 during rulemaking (EPA 2000).^b The U.S. Department of Energy Headquarters EH-412 staff has been consulting with the EPA during the EPA's review of ANSI 99, and DOE guidance for implementing ANSI 99 will likely be finalized after the rule has been promulgated. This QAPjP will apply ANSI 99 recommendations without exception.

1.4.2 Glovebox Excavator Method Project Emissions Monitoring Project Scope and Description

This QAPjP addresses the NESHAP record sampling system for the Weather Enclosure Structure (WES), laboratory analysis of samples, and data management. Glovebox Excavator Method Project operations are expected to result in suspension of radioactive material. To control dispersal of airborne

a. The estimated unabated dose caused by volatile radionuclides in the OU 7-10 inventory is much less than 10% of the total. Therefore, the Glovebox Excavator Method Project sampler is designed for collection of only particulate radioactive material.

b. As of April 2002, promulgation of the new rule is imminent, and the new rule and standard are expected to be effective on January 1, 2003.

radioactive material, the operations will be conducted within an RCS that will be vented to the atmosphere through a filtration system and stack. The potential to emit radionuclides from the WES is predominantly associated with the excavation and handling of debris during project operations. The WES will be maintained at a negative differential pressure of at least 0.1 iwg, with respect to the outside atmosphere, and all emissions from the WES will be released through a high-efficiency particulate air filtered stack. These emissions are regulated under 40 CFR 61, Subpart H, "National Emissions Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities" (referred to herein as the NESHAP).

The record sampling system will consist of two discrete subsystems:

- Stack flow sensors and meters to measure the volume of emissions from the stack during each sampling period, in accordance with the requirements of ANSI 99.
- A particulate radionuclide sampling system for collecting the record samples from the stack gas for NESHAP compliance. The record sampler provides for the collection of a representative sample of the particulate radionuclide emissions, according to ANSI 99.

1.5 Human Factors

Based on aerosol transport modeling with the Deposition 4.0 code, a transmission line may be used to carry the stack sample from the inlet to near ground level for collection on a filter to avoid hazards associated with elevated workstations. The filter holder will be located outdoors near the base of the stack, so workers will be exposed to the weather. Adverse weather conditions may require rescheduling filter change-out on occasion.

1.6 Description of this Quality Assurance Project Plan

This QAPjP was prepared in accordance with Bechtel BWXT Idaho, LLC (BBWI) Management Control Procedure (MCP) -561, "Quality Program Plan/Quality Assurance Project Plan Development," Appendix B. MCP-561 implements the "BBWI Quality Assurance Program Description Document" (PDD-1) for the preparation of QA plans. The guidance in MCP-561, Appendix B, is based on *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans* (EPA 1983), which provides specific requirements for preparing quality programs for environmental monitoring and measurement projects. Appendix B of MCP-561 lists the 20 standard elements of control specifically applicable to environmental monitoring and surveillance activities.

This QAPjP implements the elements of quality requirements in 40 CFR 61, Appendix B, Method 114, Section 4, and in DOE Order 5400.1. Table 1 cross-references this QAPjP to the QA requirements of 40 CFR 61, Appendix B, Method 114, Section 4,^c and DOE Order 5400.1.

This QAPjP incorporates by reference the applicable BBWI Analytical Laboratories Department QAPjP. Quality-affecting services provided by the laboratory are controlled under the applicable QAPjP and Analytical Laboratories Department procedures. This QAPjP also incorporates by reference the Analytical Laboratories Department's technical and administrative procedures used to operate, maintain, and calibrate measurement and sampling equipment. The latest approved versions of procedures referenced in this QAPjP apply in all cases.

Table 1. Requirements implementation matrix.

Quality Assurance Project Plan Sections According to Management Control Procedure-561 and Quality Assurance Management Staff-005/80	Requirements	
	40 <i>Code of Federal Regulations</i> 61, Method 114, Section 4	Department of Energy Order 5400.1
Title Page	—	—
Table of Contents	4.10 requires a documented quality assurance program addressing each element of Method 114, Section 4.	—
Section 1—Project Description and Design	—	10(a)(2) specifies a program design; 10(a)(6) requires "human factors".
Section 2—Project Organization and Responsibility	4.1 requires a defined/detailed organizational structure, functional responsibilities, levels of authority, and lines of communication.	10(a)(1) requires clear organizational responsibility.
Section 3—Objectives of the Quality Assurance Program	4.4 requires that objectives of the quality assurance program shall state the required precision, accuracy, and completeness of the emission data, including procedures used to assess those parameters.	—

Table 1. (continued).

Quality Assurance Project Plan Sections According to Management Control Procedure-561 and Quality Assurance Management Staff-005/80	Requirements	
	40 <i>Code of Federal Regulations</i> 61, Method 114, Section 4	Department of Energy Order 5400.1
Section 4—Sampling Procedures	<p>4.3.1 requires identification of the sampling site and points and requires the rationale for site selection.</p> <p>4.3.2 requires a description of the sampling probes and representativeness of the samples.</p> <p>4.3.3 requires a description of any continuous monitoring system.</p> <p>4.3.4 requires a description of the sample collection systems for each radionuclide measured, including the frequency.</p> <p>4.3.6 requires a description of the sample flow rate measurement system or procedures.</p> <p>4.3.7 requires a description of the effluent flow rate measurement system or procedures.</p>	10(a)(3) requires "procedures."
Section 5—Sample Custody	4.6 requires a sample tracking system to provide positive identification of samples and data through all phases of sample collection, analysis, and reporting.	10(a)(8) requires "chain-of-custody procedures."
Section 6—Calibration Procedures and Frequency	4.3.3–4.3.7 require a description of the calibration procedures and frequency for continuous emission monitoring, sample collection systems, laboratory analysis, sample flow rate measurement systems, and effluent flow rate measurement systems, respectively.	10(a)(5) requires "laboratory quality control"; 10(a)(3) requires procedures.
Section 7—Analytical Procedures	4.3.5 requires description of laboratory analytical procedures.	10(a)(3) requires procedures.
Section 8—Data Reduction, Validation, and Reporting	—	10(a)(11) requires "independent data verification."

Table 1. (continued).

Quality Assurance Project Plan Sections According to Management Control Procedure-561 and Quality Assurance Management Staff-005/80	Requirements	
	40 <i>Code of Federal Regulations</i> 61, Method 114, Section 4	Department of Energy Order 5400.1
Section 9—Internal Quality Control Checks and Frequency	4.5 requires a quality control program to evaluate quality of emissions data, including replicates, spiked and split samples, blanks, and control charts.	10(a)(4) and (5) require "field quality control" and "laboratory quality control"; 10(c) requires laboratories to participate in Department of Energy's Quality Assessment Program for Radioactive Material.
Section 10—Performance and Systems Audits and Frequency	4.7 requires periodic internal and external audits to monitor compliance with the quality assurance program.	10(a)(10) requires "performance reporting"; 10(a)(11) requires independent data verification.
Section 11—Preventive Maintenance Procedures and Schedules	American National Standards Institute 99, Table 5, by reference from 40 <i>Code of Federal Regulations</i> 61, Method 114.	—
Section 12—Specific Routine Procedures to Assess Data Precision, Accuracy, and Completeness	—	10(a)(11) requires independent data verification.
Section 13—Corrective Action	4.2 requires administrative controls to ensure prompt response in the event that emission levels increase due to unplanned operations. 4.9 requires a corrective action program to be established.	—
Section 14—Quality Assurance Reports to Management	4.9 requires periodic reports to responsible management on the performance of the emissions measurements program.	—
Section 15—Change control or revision process while quality assurance project plan is in effect	—	—
Section 16—Reporting	—	—
Section 17—Records	—	10(a)(7) recordkeeping.

2. PROJECT ORGANIZATION AND RESPONSIBILITY

This section identifies the organizational responsibilities, relationships, and lines of communication for activities related to the monitoring and reporting of radionuclide emissions from the RCS HVAC stack. Individual organizations identified in this plan maintain current organizational charts that reflect the levels of authority and responsibility used to implement this plan. Functional relationships and lines of communication for the NESHAP Monitoring Program are summarized in Table 2.

Table 2. Lines of communication.

Function	Performer	Lines of Communication
Maintenance—NESHAP record sampler/flow meter	Craftsperson	↔ Maintenance technical lead ↔ SS ↔ Glovebox Excavator Method Project operations manager
Operation—NESHAP record sampler/flow meter	Glovebox Excavator Method Project operations staff	↔ SS ↔ Glovebox Excavator Method Project operations manager
Sample filter removal (quarterly)	Glovebox Excavator Method Project operations staff	↔ SS ↔ Glovebox Excavator Method Project operations manager
Transfer filters to laboratory	Glovebox Excavator Method Project operations staff	↔ SS ↔ Glovebox Excavator Method Project operations manager ↔ laboratory personnel
Sample analysis, review, and reporting	Analytical Laboratories Department staff	↔ Analytical Laboratories Department quality assurance ↔ Analytical Laboratories Department management ↔ Glovebox Excavator Method Project operations
Transmit analysis results to the facility	Analytical Laboratories Department staff	↔ Glovebox Excavator Method Project operations manager ↔ Analytical Laboratories Department management ↔ Analytical Laboratories Department quality assurance
Quarterly Retrieval Confinement Structure heating, ventilating, and air conditioning stack reporting	Glovebox Excavator Method Project operations staff	↔ Glovebox Excavator Method Project operations manager ↔ Glovebox Excavator Method Project director
Environmental Information System data entry	Laboratory staff	↔ BBWI NESHAP coordinator
Annual Retrieval Confinement Structure stack reporting	Glovebox Excavator Method Project operations staff	↔ Glovebox Excavator Method Project operations manager ↔ Glovebox Excavator Method Project director ↔ BBWI NESHAP coordinator

Table 2. (continued).

Function	Performer	Lines of Communication
NESHAP annual report	BBWI NESHAP coordinator	↔ BBWI Environmental, Safety, and Health Program director ↔ Department of Energy Idaho Operations Office Idaho National Engineering and Environmental Laboratory NESHAP coordinator
Annual assessments	BBWI NESHAP coordinator	↔ Glovebox Excavator Method Project operations manager ↔ Environmental, Safety, and Health Program management

Annual assessments will be instituted if the Glovebox Excavator Method Project operations schedule is extended beyond 1 year from the startup date.

BBWI-Bechtel BWXT Idaho, LLC
 NESHAP-National Emission Standards for Hazardous Air Pollutants
 SS-shift supervisor

Organizations and their responsibilities for implementing the NESHAP Monitoring Program are provided in the following subsections. The listing of responsibilities is not intended to be comprehensive; rather, it reflects the general areas of responsibility for these organizations.

Glovebox Excavator Method Project operations performs the following activities:

- Reviews and approves this plan and any revisions
- Provides overall responsibility, coordination, and integration of monitoring radiological emissions from the RCS HVAC stack
- Collects samples from the record sampler and delivers them to the Analytical Laboratories Department
- Performs quarterly and annual calculation of the radiological emissions released from the RCS HVAC stack in accordance with approved procedures
- The Glovebox Excavator Method Project manager provides copies of the quarterly and certifiable (according to 40 CFR 61.94, Paragraph [b], [8]) annual reports to the BBWI NESHAP coordinator
- Manages records of NESHAP radiological emission data, stack flow, and reports in accordance with approved BBWI procedures
- Reviews procedures concerning the NESHAP emission monitoring activities
- Prepares work packages
- Ensures that personnel are properly qualified and trained before they conduct operations
- Conducts and coordinates periodic reviews of this QAPjP, sampling procedures, and applicable preventive maintenance procedures in accordance with MCP-135, "Creating, Modifying, and Canceling Procedures and Other DMCS-Controlled Documents."

2.1 Maintenance Department

The Maintenance Department performs the following activities:

- Maintains, calibrates, and repairs the record sampler and the stack flow in accordance with applicable procedures and this QAPjP
- Provides notice to the Glovebox Excavator Method Project operations manager (or shift supervisor) concerning problems encountered.

2.2 Analytical Laboratories Department

The Analytical Laboratories Department performs the following activities:

- Reviews and approves this plan and any revisions
- Assists in establishing data quality objectives for radioactivity measurement and analysis for the samples
- Analyzes sample media delivered to the laboratory in accordance with (a) the specifications on the chain-of-custody form, (b) laboratory standard operating procedures, and (c) the applicable laboratory QAPjP
- Ensures that analytical procedures are implemented that result in analytical data consistent with the quantitative parameters specified in this QAPjP and the applicable laboratory QAPjP
- Reviews and approves analytical results in accordance with the applicable laboratory QAPjP
- Transmits the results of radiological analysis to the Glovebox Excavator Method Project operations manager.

2.3 Environmental Affairs Directorate

The environmental affairs director is responsible for review and approval of this QAPjP and to review and approve implementation of the Glovebox Excavator Method Project NESHAP Monitoring Program. The environmental affairs Air/Water/National Environmental Policy Act Policy and Permitting Department performs the following activities:

- Reviews this plan and any revisions
- Interprets applicable regulations (such as the NESHAP) and permits to identify requirements, which, when fulfilled, ensure compliance with DOE orders, EPA regulations, and Idaho Department of Environmental Quality regulations
- Communicates technical requirements for NESHAP radiological emissions monitoring to Glovebox Excavator Method Project operations management
- Performs annual assessments of the INEEL facilities' NESHAP monitoring programs
- Coordinates technical reviews of the source terms used as input for NESHAP compliance dose calculations

- Verifies the radiological emission estimates entered into the Environmental Information System
- Provides support during external audits, as requested.

2.4 Bechtel BWXT Idaho, LLC Quality Assurance Department

The BBWI QA Department performs the following activities:

- Reviews this QAPjP and any revisions
- Reviews applicable procedures, design documents, and procurement documents related to NESHAP monitoring for inclusion of quality requirements
- Performs, if requested, periodic external audits of the system and prepares audit reports for management.

3. OBJECTIVES OF THE QUALITY ASSURANCE PROGRAM

The objective of emissions monitoring of the RCS HVAC stack is to generate data of appropriate quality to serve as a record of emissions for NESHAP compliance. The quantitative and qualitative measurements used to characterize a physical or chemical property always have associated uncertainty. Uncertainty in the data must be held within defined limits if the data are to be used in a decision-making process. Project-specific goals for data quality are established by specifying the tolerable level of uncertainty in the data in terms of standard parameters. These goals, known as data quality objectives (DQOs), specify the level of uncertainty that a decision-maker will accept in results derived from the monitoring data.

3.1 Definitions

The EPA guidance for development of DQOs (EPA 1996) calls for quantitative measurements of precision (P), accuracy (A), and completeness (C), and qualitative measurements of representativeness (R) and comparability (C).

3.1.1 Quantitative Data Quality Objectives

The quantitative QA parameters are precision, accuracy, and completeness (defined in 40 CFR 61, Appendix B, Method 114, 4.4). Accuracy is the degree of agreement of a measurement with a true or known value. Precision is a measure of the agreement among individual measurements of the same parameter under similar conditions. Completeness is a measure of the amount of valid data obtained compared to the planned amount.

3.1.2 Qualitative Data Quality Objectives

The qualitative QA parameters are comparability and representativeness. Comparability of data sets is the determination that the data were developed using identical or equivalent sampling and analysis methods. If so, the data sets may be compared or combined for statistical analysis. Comparability is promoted by consistent use of procedures through all phases of sampling and analysis and confirmed by the degree of similarity of results of quality control (QC) sample analysis. With respect to stack sampling for NESHAP compliance, representativeness is a measure of the degree to which samples represent the average properties of the physical and chemical composition of the emissions. Representativeness is promoted by adherence to the ANSI 99 standard and consistent use of procedures through all phases of sampling and analysis.

3.2 OU 7-10 National Emission Standards for Hazardous Air Pollutants Monitoring—Quantitative Data Quality Objectives

The regulatory requirements for the project quantitative DQOs are that the monitoring data must be sufficient to (a) show that the INEEL complies with the 10-mrem/yr dose limit in the NESHAP and (b) accurately report annual facility releases. The quantitative goals established for each component of the radiological emissions monitoring system are summarized in Table 3. Required analytical detection limits (presented in Section 7) are established well below the levels required to show compliance with the NESHAP, and the applicable laboratory QAPJP describes actions taken to ensure and demonstrate that the DQOs for analysis are met. Precision, accuracy, and completeness objectives for stack sampling equipment and flow measuring equipment are in accordance with Table 3 of ANSI 99.

Table 3. Table of precision, accuracy, and completeness parameters.

Quantitative Parameters			
Item	Precision ^a	Accuracy	Completeness ^b
Equipment			
NESHAP record sampler flow rate measurement	± 10%	± 10%	NA
NESHAP record sampler operation	NA	NA	90%
Stack flow meter operation	± 10%	± 10%	90%
NESHAP record sampler flow rate control over full range of filter load	NA	± 15%	NA
NESHAP record sampler flow rate proportioning relative to stack flow ^c	NA	± 20%	NA
Overall completeness	NA	NA	75%
Laboratory Analyses of Filters for Particulate Radionuclides ^d			
Gamma emitters (Cs-137/Ba-137m)	± 10%	± 10%	90%
Sr-90	± 15%	± 15%	90%
Am-241, Pu-239	± 15%	± 15%	90%

a. Laboratory precision estimates are based on repeated measurements of spiked samples prepared in the laboratory.

b. Overall completeness objectives over the annual compliance-reporting period are set at 75% to allow for the loss of up to two samples.

c. The continuous-operation sampling system pulls in air samples to maintain a constant ratio of stack flow to sample flow. The nominal sample flow rate will be ~2 actual cubic feet per minute. Airflow through the samples is controlled before the pump and regulated to ±10% of the set flow rate over the full range of expected flow restriction (as measured using typical clean and loaded filters or over a range equal to 2X—the differential pressure required to cause 2 ACFM flow through a clean filter). The ratio of stack-to-sample flow rates will be held constant to + 20% over the expected range of stack flows and filter loads.

d. Precision and accuracy for analyses are evaluated with quality control samples as part of the laboratory's participation in performance sample programs (e.g., Mixed Analyte Performance Evaluation Program).

NESHAP-National Emission Standards for Hazardous Air Pollutants

3.3 OU 7-10 Glovebox Excavator Method Project National Emission Standards for Hazardous Air Pollutants Monitoring—Qualitative Data Quality Objectives

Comparability is evaluated by (1) verifying that standardized and controlled sampling and analytical methods have been used and (2) using National Institute of Standards and Technology (NIST) traceable standards during analysis. Representativeness is evaluated by verifying that the record sampling system has been designed and operated in conformance with ANSI 99.

4. SAMPLING PROCEDURES

The RCS record sampling system consists of two subsystems: the stack flow meters and the particulate sampler. The stack flow meter is used to measure the volume of emissions, and the particulate sampler is used to collect representative samples of the particulate radioactive material in the emissions. The RCS stack-monitoring system will be operated according to reviewed Glovebox Excavator Method Project procedures that incorporate the manufacturer's instructions wherever applicable. Procedures for each system are summarized below.

4.1 Stack Flow Meters

Stack flow meters and associated sensors are installed on the RCS stack to continuously measure the volume of emissions. The outputs of these devices will be recorded by a data logger in the stack monitor cabinet and may be recalled to provide the information necessary to determine emission flow for a requested period. An operator log will be used to record the time of filter installation and removal, the elapsed time the filter was in service, and the total stack flow (actual volume units) during the period.

4.2 Particulate Sampler

The particulate sampler collects a representative sample of particulate radionuclide emissions on a filter for subsequent laboratory analysis. The filter will be selected according to the recommendations of Annex D of ANSI 99. The NESHAP record sampler will consist of a single-nozzle, shrouded sampling probe (DOE 1994), an aerosol transmission line, a flow-regulated proportional air pump, a sample flow sensor, a sample filter holder, and associated electronics. The sample flow sensor on the NESHAP record sampler will generate a signal to alert the operator in the event of a low-flow condition. The sensor will activate an alarm if low- or loss-of-flow occurs to indicate that the shift supervisor must begin appropriate response and corrective actions.

The normal flow for this stack is 6,360 standard cubic feet per minute. Stack flow is maintained within 10% of this nominal rate during normal operations. The single-nozzle, shrouded-sampling probe will be selected for the RCS HVAC stack assuming operation in an 18-in.diameter stack, with a flow of 6,400 ACFM at 75°F and 5,000 ft in elevation. A backup system is available to provide 3,200 ACFM flow in the event that the primary system fails. The sampling system will function within design specifications for volume flows in the range of 2,000 to 8,000 ACFM.

Flow rates under accident conditions could be as low as 1,000 ACFM. According to ANSI 99,

Under most conditions, changes in flow rate will not significantly affect the mixing. In general, if the flow rate increases, acceptable mixing will not be degraded; however, if the flow rate were to be reduced to the point where laminar conditions were approached, there could be a major degradation in mixing effectiveness. This event would generally only be possible with a very small cross section stack or duct, such as a tank vent. If this is possible, the flow system should be modified to preclude the onset of near-laminar conditions.

Even if the OU 7-10 stack flow decreases to 2,000 ACFM, the duct Reynolds number will be $\sim 10^5$, indicating turbulent flow. Also, the flow parameter (product of linear stack gas velocity and diameter) for the RCS stack will be within a factor of YYY, indicating that the RCS sampler will operate under stack flow conditions that are equivalent to the conditions used to qualify the design pattern stack.

4.2.1 Sampler Inlet Siting to Ensure Representative Sampling

To qualify new stacks or ducts by reference to existing stacks that are of similar design, ANSI 99 requires that the new stack and probe design have the following characteristics:

- “A geometrically similar stack or duct (one with proportional critical dimensions) has been tested, and the sampling location has been found to comply with the requirements of Clause 5.2.2 (of ANSI 99). Critical dimensions are those associated with components of the effluent flow system that can influence the degree of contaminant mixing and the velocity profile. The prior testing may be conducted either on a stack or duct in the field, or it may be conducted on a scale model.”
- “The product of mean velocity times the hydraulic diameter of the candidate stack or duct is within a factor of six of that of the tested stack or duct, and the hydraulic diameter of the stack or duct is at least 250 mm at the sampling location. The Reynolds numbers based on hydraulic diameter of both the candidate stack or duct and the tested stack or duct are greater than 10,000.”
- “The sampling location in the candidate stack or duct is placed at a geometrically similar location to that in the tested stack.”

The Glovebox Excavator Method Project stack and sampler probe inlet location will be geometrically similar to an existing stack and probe that have been tested for aerosol and velocity mixing. In accordance with ANSI 99, the similarity of the RCS HVAC stack and sampling system to a system that has previously qualified for representative sampling serves as partial qualification of the RCS HVAC sampling system. To fully qualify, the RCS stack must be tested and meet the following additional criteria for contaminant concentration and velocity profiles:

- The velocity profile in the candidate stack or duct must meet the requirements of Clause 5.2.2.2 (ANSI 99).
- The difference between the coefficients of variation of the stack gas velocity profiles (measured in accordance with ANSI 99) of the two systems must not exceed 5%, absolute.
- At the proposed sampling location, the flow of particles and gases shall not exhibit excessive angularity or swirl. The presence of swirl can adversely affect the mixing of particles in the effluent and degrade the performance of a sample nozzle. The criterion of acceptability is that the average flow angle shall not exceed 20 degrees (relative to the longitudinal axis of the stack or duct). An appropriate method for determining if a proposed location meets this criterion is described in 40 CFR 60, Appendix A, Method 1, Section 2.4, "Verification of the Absence of Cyclonic Flow."

Design information for the NESHAP record sampler and results of the final systems operation test report will be contained in a start-up testing report, (e.g., *Glovebox Excavator Method Project NESHAP Monitoring System* [Environmental Affairs # 99491]).

4.2.2 Sample Collection Schedule and Procedures

A total of nine samples will be collected from the record sampler during Glovebox Excavator Method Project operations. Two samples will be collected during overburden removal, five samples will be collected during waste zone retrieval, and two samples will be collected during underburden sampling and closure. The schedule for the Glovebox Excavator Method Project may be changed during operations, depending on conditions encountered during retrieval. The schedule for sample collection will be determined during operations using the most current available schedule for the progress of the project, but

the period between filter collections will not exceed one month. If necessary, more than nine samples will be collected to cover the entire operational period. To the extent possible, sample collection will be scheduled so that each sample represents an equal period within the operational phases mentioned above. Within one day of the planned filter collection date, the filter will be removed from the NESHAP record sampler for analysis. Individuals performing the sampling will use a reviewed and approved procedure to collect the sample (to be developed). The procedure will describe the personnel, equipment, safety practices, custody form, and record-keeping activities to be performed during the sampling event. Pertinent information will be recorded on the NESHAP stack record sampler log and the chain-of-custody form.

No special sample preservation procedures are necessary. In addition, no holding times are required, because essentially no short-lived radioactive material will be present in the aged waste that is buried in OU 7-10.

5. SAMPLE CUSTODY

Sample custody procedures are required to confirm the integrity of the sample and ensure legal admissibility of the Glovebox Excavator Method Project stack sampling results.

5.1 Field Sampling Operations

The NESHAP record filter samples will be collected and transported to the laboratory under chain-of-custody controls. The Environmental Restoration chain-of-custody procedure (MCP-244) specifies the actions necessary to maintain the integrity of the samples during sample collection and storage until they are transferred to the laboratory. Field sampling personnel will complete the chain-of-custody form (Form 450.06) at the time of sample collection and attach a unique label to the sample collection bag. The chain-of-custody form and sample collection label will include the sample location, sample number(s), date and time of sample collection, the name and initials of the individual collecting the sample, and the requested analyses. Separate request-for-analysis forms will not be used. The chain-of-custody form will be kept with the samples until they are transferred to the laboratory sample custodian. The field and laboratory sample custodians who are responsible for samples will document the transfer on the chain-of-custody form by signing and dating the form, also noting the time of transfer. A record copy of the chain-of-custody form provides the documentation necessary to trace possession of the sample from the time of collection to receipt at the laboratory.

Filter samples will be identified with a three-part identifier (see Table 4)

Table 4. Filter samples.

Example:	Stack	Date of Filter Removal
Facility, Stack, and Date:	WMF-671	12/15/2003
Example Sample Number:	WMF651121503	NA

5.2 Laboratory Operations

The laboratory sample custodian will log the sample(s) into the sample tracking system and control the samples in accordance with the applicable laboratory procedures. The laboratory may assign an additional number for internal tracking purposes, but the Glovebox Excavator Method Project stack identification number must be retained and documented on the chain-of-custody form and the laboratory analysis forms.

6. CALIBRATION PROCEDURES AND FREQUENCY

The calibration program for all measurement and testing equipment will be implemented through procedures developed to meet the requirements of MCP-2391, "Calibration Program." Specific calibration procedures will be developed under this program for the equipment. The calibration program for the Glovebox Excavator Method Project NESHAP Monitoring Program will incorporate the following:

- Procedures for maintaining the calibration of all measurement and testing equipment and all measurement standards used by Glovebox Excavator Method Project operations
- The use of documented measurement standards traceable to NIST, natural physics constants accepted by NIST, ratio types of calibrations, or comparisons to consensus standards and certified reference standards
- Preparation and use of calibration procedures that specify the measurement standard, parameter, range, accuracy, and acceptable tolerance of the calibration; detailed instructions for performance of the calibration; and intervals between calibration
- Labeling of all measurement and testing equipment (Radiation Measurement Laboratory doesn't label detector systems) and measurement standards to indicate the calibration status, affixing tamper-resistant seals, and retention of calibration records for specific periods of time
- Evaluation of measurement and testing equipment or any measurement standard detected in an "out of tolerance" condition to determine the validity of previous calibrations and measurement results.

6.1 National Emission Standards for Hazardous Air Pollutants Monitoring System Component Calibration

The manufacturer of stack sampling probes, valves, and the continuous operation constant flow sample pump will calibrate the system before installation. The probe and transmission line do not require continuing calibration, unless physically damaged or modified. The pump system (sample flow controller and pump), sample flow meter, and stack flow meter each require periodic calibration performed according to the manufacturer's instructions at no less than the period recommended in ANSI 99.

Calibration requirements of the individual components in the RCS stack monitoring system are listed in Table 5.

Table 5. Calibration methods and frequency, conforming to American National Standards Institute 99, Section 7.6.

Item	Frequency	Calibration Procedure or Method
Record sampler flow meters and timers	Annual	In accordance with manufacturer's procedures.
Stack flow meters	Annual	Flow measurement equipment must agree with Method 2 test results within $\pm 10\%$. Calibration is in accordance with manufacturer's procedures. (Comparison with 40 CFR Part 60, Appendix A, Method 2.)

6.2 Analytical Laboratories Department

The Analytical Laboratories Department will calibrate laboratory equipment as part of the established analytical procedures, in accordance with the applicable laboratory QAPjP. Most of the equipment is calibrated with method-use as part of specific radioanalytical procedures. With-use calibrations follow method-specific procedures, which are described or referenced in the individual methods in the *Analytical Chemistry Methods Manual*. If a calibration procedure is not method-specific, then separate instrument-specific calibration procedures will be used.

The calibration standards used by the Analytical Laboratories Department for instrument calibration will be NIST standards or are NIST-traceable standards, if such exist.

7. ANALYTICAL PROCEDURES

Radiological analyses will be performed in accordance with written procedures under an established laboratory QAPjP. Currently applicable analytical procedures are specified in Table 6, but equivalent procedures may be specified in a reviewed and approved Scope of Work, provided that the procedures meet the minimum detection levels specified in Table 6.

Table 6. Analytical parameters and methods.

Parameter	Sample Category	Analytical Method	Comparable Environmental Protection Agency Method	Minimum Level of Detection
Gamma emitters (target list to be determined)	Particulate sample	Method 3993, "Gamma Spectrometry using the Sun SparcStation 2"	G1 (40 CFR 61 Appendix B, Method 114)	5E-11 Ci/filter
Alpha-emitting transuranic radionuclides	Particulate sample	Method 3940, "Determination of Plutonium and Strontium in Particulate Filters and Other Low-Level Samples by Solid Phase Extraction"	A1 or A2 (40 CFR 61 Appendix B, Method 114); Analytical Chemistry Methods Manual 3816	To be determined
Sr-90	Particulate sample	Method 3940, "Determination of Plutonium and Strontium in Particulate Filters and Other Low-Level Samples by Solid Phase Extraction"	B3 (40 CFR 61 Appendix B, Method 114); Analytical Chemistry Methods Manual 3816/3815	2E-12 Ci/filter
Sample media preparation	Particulate sample	Method 3982, "Pelletizing Particulate Filters for Gamma-ray Spectroscopy" "Preparation of Filter Samples for Gamma Spectrometry"	NA	NA

8. DATA REDUCTION, VALIDATION, AND REPORTING

8.1 Laboratory Data Reduction, Review, and Reporting

The Analytical Laboratories Department is responsible for the reduction and review of all analytical data in accordance with standard operating procedures, as described in Plan-153, "Quality Assurance Project Plan for the Analytical Laboratories Department Radioanalytical Section." This process consists of multiple levels of technical and QA review. All computer program algorithms will be validated and verified according to requirements of Plan-153 before generation of data. At a minimum, all reports generated by the Analytical Laboratories Department will be independently reviewed for accuracy and completeness according to customer requirements before formal reporting to external data users. Results for each sample and the associated uncertainty will be reported to Glovebox Excavator Method Project operations. Any uncorrectable deficiencies associated with the data are summarized in a brief narrative accompanying the final report to the customer. Results of QC sample analyses will be transmitted to the customer if requested. The laboratory provides copies of the final analytical data to the Glovebox Excavator Method Project operations manager.

8.2 Glovebox Excavator Method Project Operations

8.2.1 Glovebox Excavator Method Project Emissions Monitoring Program Reports

Glovebox Excavator Method Project operations will prepare an annual report of the emissions measurement program. If Glovebox Excavator Method Project operations are carried out in more than one calendar year, a separate annual report will be required for each year. Annual reports will provide:

- The radionuclide concentration data and summary of the supporting QA data. Emissions may be extrapolated from actual measurements, but the periods of actual and extrapolated data must be reported.
- Volume of stack emissions for the year.
- Operating times for the NESHAP record sampler and stack flow measuring equipment for comparison with the DQOs for completeness.
- Results of assessments or audits, and a description of any required corrective actions.
- Discussion of any data that do not achieve the DQOs of this QAPjP, including precision, accuracy, and completeness.
- Discussion of any data extrapolation used during any identified periods when completeness of data for the NESHAP record sampler is less than the DQO.

The report will be certified by the Glovebox Excavator Method Project manager and provided to the BBWI NESHAP coordinator.

8.2.2 Environmental Information System Reports

Estimates of radiological emissions (measured in curies) and volumetric discharge (measured in actual cubic meters or cubic feet) from the RCS stack will be reported to the Environmental Information System by Analytical Laboratories Department staff.

9. INTERNAL QUALITY CONTROL CHECKS AND FREQUENCY

Internal QC measures will be used to confirm that the quality of the sample collection system, the laboratory analyses, and the data validation/reporting process meet the programmatic DQOs. The internal QC checks are included in the step-by-step instructions in the procedures of the performing organizations. The checks are implemented during (a) preventive maintenance operations, (b) calibration of the sampling equipment and stack flow measuring equipment, (c) validation of field and QC sample analyses by the laboratory, and (d) verification of data by the BBWI NESHAP coordinator.

9.1 National Emission Standards for Hazardous Air Pollutants Record Sampler and Stack Flow Meter Internal Quality Control

Internal QC for the NESHAP record sampler and the stack flow meter is achieved through the implementation of established operating, preventive maintenance, and calibration procedures (see Table 7).

Table 7. Response test methods and frequency, conforming to American National Standards Institute 99, Section 7.6.

Item	Frequency	Calibration Procedure or Method
Record sampler flow meters and timers	Quarterly	In accordance with manufacturer's procedures
Stack flow meters	Quarterly	In accordance with manufacturer's procedures

9.2 Laboratory Internal Quality Control

The laboratory QC program requires routine analysis of QC samples for ongoing evaluation of analytical method, instrument, and analyst performance. These internal QC checks are summarized in the applicable laboratory QAPjP.

10. PERFORMANCE AND SYSTEM AUDITS AND FREQUENCY

For long-term projects, audits and assessments are used to evaluate the ability of a system to produce data that fulfill the program objectives, satisfy the QC criteria, and identify areas requiring corrective action. Individuals who are familiar with the objectives, principles, and procedures used to obtain, analyze, and report the data, but who are not directly involved with the program, will conduct audits and assessments. Written reports of the results will be provided to the appropriate management.

The Glovebox Excavator Method Project operating schedule is expected to be no more than 15 weeks. Startup review, testing, and associated reports will serve as the performance audit for the project. If project operations are extended beyond one year, the project NESHAP monitoring system will be subject to periodic assessments and audits.

10.1 Glovebox Excavator Method Project Annual Assessments (If Operations Are Extended Beyond One Year)

Annual performance assessments will be performed to monitor compliance with the implementation of this QAPjP and applicable regulatory and permit requirements. The assessments will evaluate the performance of the Glovebox Excavator Method Project monitoring project during a randomly selected sample collection period. The sampling, analysis, and reporting for that period will be reviewed, focusing on compliance with implementing procedures and data reporting. Assessments also will include a review of any planned or completed corrective actions, personnel responses to system malfunctions during the calendar year, and any deviations from quality standards that were identified in previous assessments.

The Analytical Laboratories Department will conduct assessments in accordance with the applicable laboratory QAPjP.

10.2 Glovebox Excavator Method Project External Audits (If Operations Are Extended Beyond Three Years)

External performance and system audits will be performed to monitor compliance with (1) this QAPjP; (2) 40 CFR Part 61, Appendix B, Method 114, Section 4; and (3) the Laboratory Quality Program (Analytical Laboratories Department only). Quality Assurance Department staff will conduct any requested independent, external audits using regulatory and technical expertise from other BBWI organizations. The OU 7-10 program manager will schedule an external audit if the Glovebox Excavator Method Project operations are extended beyond three years. External audits will be conducted in accordance with established company programs and procedures in accordance with MCP-589, "Quality Assurance Surveillance."

10.3 Analytical Laboratories Department Performance Evaluation Programs

The Analytical Laboratories Department (radioanalytical laboratories) participates in performance evaluation programs sponsored by independent agencies and organizations. These evaluation programs provide independent assessments of laboratory performance for specific analytes and matrices. The two major radioanalytical performance evaluation programs, the Mixed Analyte Performance Evaluation Program, and the Quality Assessment Program are administered by DOE laboratories. Analytical

Laboratories Department participation in these programs is summarized in the applicable laboratory QAPjP.

11. PREVENTIVE MAINTENANCE PROCEDURES AND SCHEDULES

Preventive maintenance is required to minimize equipment failures and promote proper equipment performance. All measurement equipment or instrumentation that directly affects the quality of the radiological emissions data from the RCS HVAC stack will be included in a preventive maintenance program.

The Glovebox Excavator Method Project operating schedule is expected to be no more than 15 weeks, which is a shorter period than that required by ANSI 99 for any preventive maintenance cycle. Startup review, testing, and associated reports will serve as the initial preventive maintenance cycle for the project. If project operations are extended beyond one year, the project NESHAP monitoring system will be subject to periodic audits.

Preventive maintenance of the RCS stack monitoring system includes equipment cleaning and change-out of worn equipment. Procedures will be performed in accordance with the approved Glovebox Excavator Method Project preventive maintenance program (to be written). The schedule for preventive maintenance of the project stack monitoring system, if operations are extended beyond 20 weeks, is summarized in ANSI 99, Table 5.

The Analytical Laboratories Department preventive maintenance program is covered in the applicable laboratory QAPjP.

12. SPECIFIC ROUTINE PROCEDURES TO ASSESS DATA PRECISION, ACCURACY, AND COMPLETENESS

12.1 Glovebox Excavator Method Project Operations

The operations organization will assess precision and accuracy using QC sample data. Results for these QC samples will be evaluated as follows:

Precision

Precision between two recounts of a field sample or spiked sample is expressed as the relative percent difference and is calculated as

$$RPD = \frac{|C_1 - C_2|}{\left[\frac{C_1 + C_2}{2} \right]} \times 100 \quad (1)$$

where

C1 = the original (first) measured sample result

C2 = the duplicate (second) measured sample result.

Note that if either C₁ or C₂ are non-detects, then zero will be used for that measurement in the relative percent difference calculation. If both C₁ and C₂ are non-detects, the relative percent difference is not calculated.

Percent relative standard deviation (%RSD) is used to measure precision between three or more replicates and is calculated as follows:

$$\%RSD = RSD \times 100 \quad (2)$$

The RSD is the standard deviation expressed as a fraction of the arithmetic mean and is also used as a precision estimator. Application is to three or more replicates. The RSD is calculated as follows:

$$RSD = \frac{s}{\bar{x}} \quad (3)$$

where

s = standard deviation

\bar{x} = arithmetic mean.

Accuracy

The laboratory will participate in an interlaboratory QC sample program. The accuracy of the laboratory analysis of the QC samples will be quantified as percent agreement, as calculated using the following equation:

$$\%R = \frac{C_m}{C_t} \times 100 \quad (4)$$

where

C_m = the measured concentration or amount of the radionuclide

C_t = the true (known) concentration or amount of the radionuclide.

If the sample result used in the equation is a nondetect (that is, less than the detection limit), then zero will be used in place of the result in the equation.

Completeness

Percent completeness (%C) for project samples is calculated as follows:

$$\%C = \frac{M_v}{M_t} \times 100 \quad (5)$$

where

M_v = actual number of individual sample results by analysis group judged to be valid

M_t = planned number of sample results by analysis type.

Rejection of Data

If there are questionable data, the OU 7-10 project manager will request an evaluation of the data and provide a documented basis for accepting, qualifying, or rejecting the data. Rejected data will be removed from the monitoring data set and retained in a separate database.

12.2 Analytical Laboratories Department—Radioanalytical Section

Methods and calculations for evaluation of various QC sample results are defined in the applicable laboratory QAPjP. These include calculation of arithmetic mean and standard deviations, accuracy and bias, completeness, and detection limits.

13. CORRECTIVE ACTION

13.1 Deviations

Actions to correct deficiencies in the emissions measurement system will be initiated, documented, and tracked through one of several mechanisms depending on the nature of the noncompliance and how the noncompliance was discovered. Process deficiencies (i.e., a deficiency in a process, program, or activity that renders the quality unacceptable) will be identified and tracked through resolution under MCP-598, "Process Deficiency Resolution," using the Issue Communication and Resolution Environment system. Nonconforming items (i.e., an item, hardware, material, or data having unacceptable quality) will be identified and tracked according to MCP-538, "Control of Nonconforming Items."

14. QUALITY ASSURANCE REPORTS TO MANAGEMENT

A report summarizing all audit and assessment activities will be prepared within 90 days of the completion of any assessment or audit that is conducted in response to Sections 10.1 or 10.2 of this QAPjP. The report is presented to Glovebox Excavator Method Project management and all INEEL organizations having a stake in the assessment. Each organization that has been assessed will be responsible for preparing and carrying out corrective action plans to resolve deficiencies.

15. CHANGE CONTROL

Changes to this QAPjP, the design or operation of the Glovebox Excavator Method Project stack, or the design or operation of the record sampling system will require the review and approval of project operations, project QA, Analytical Laboratories Department staff, and environmental affairs staff, as appropriate.

16. REPORTING

Glovebox Excavator Method Project operations and the BBWI NESHAP coordinator will use the NESHAP monitoring data to estimate cumulative radionuclide emissions for compliance with 40 CFR 61.93. The data also will be used to prepare the INEEL NESHAP annual report.

Unplanned and Unexplained Emissions

An emission occurrence is an unplanned release of radionuclides detected by the NESHAP record sampler that potentially could cause a dose in excess of 0.1 mrem/yr to a hypothetical member of the public located offsite. All sampling results will be reviewed as they become available to determine whether the calculated dose could exceed 0.025 mrem/yr. If so, Glovebox Excavator Method Project operations staff must notify the BBWI Regulatory Affairs Department manager and develop any necessary actions to ensure that the annual limit is not exceeded. Actions could include operational changes, engineering changes, or other means to limit releases.

17. RECORDS

BBWI manages records through established programs (PDD-11, "Records Management") and procedures (MCP-557, "Records Management"). Records generated during implementation of procedures are identified in accordance with Standard -8 and Standard-9, which are company procedure writing standards. Records are assigned retention periods according to regulatory requirements and standards promulgated through the National Archives and Records Administration.

Raw radioanalytical data are maintained by the Analytical Laboratories Department for a period of five years. Dose modeling documentation is maintained by environmental affairs for a minimum of five years, as required by the NESHAP^c.

c. Emergency plan implementing procedure records retention is 75 years. Environmental Affairs Department transfers records after five years.

18. REFERENCES

NOTE: The latest versions of any referenced BBWI documents apply.

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- 40 CFR 61, 2002, Title 40, "Protection of Environment," Part 61, "National Emission Standards for Hazardous Pollutants," *Code of Federal Regulations*, Office of the Federal Register, March 2002.
- 40 CFR 61.93, 2002, Title 40, "Protection of Environment," Part 61, "National Emission Standards for Hazardous Pollutants," Section 63, "Emission Monitoring and Test Procedures," *Code of Federal Regulations*, Office of the Federal Register, March 2002.
- 40 CFR 61.94, 2002, Title 40, "Protection of Environment," Part 61, "National Emission Standards for Hazardous Pollutants," Section 94, "Compliance and Reporting," *Code of Federal Regulations*, Office of the Federal Register, March 2002.
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