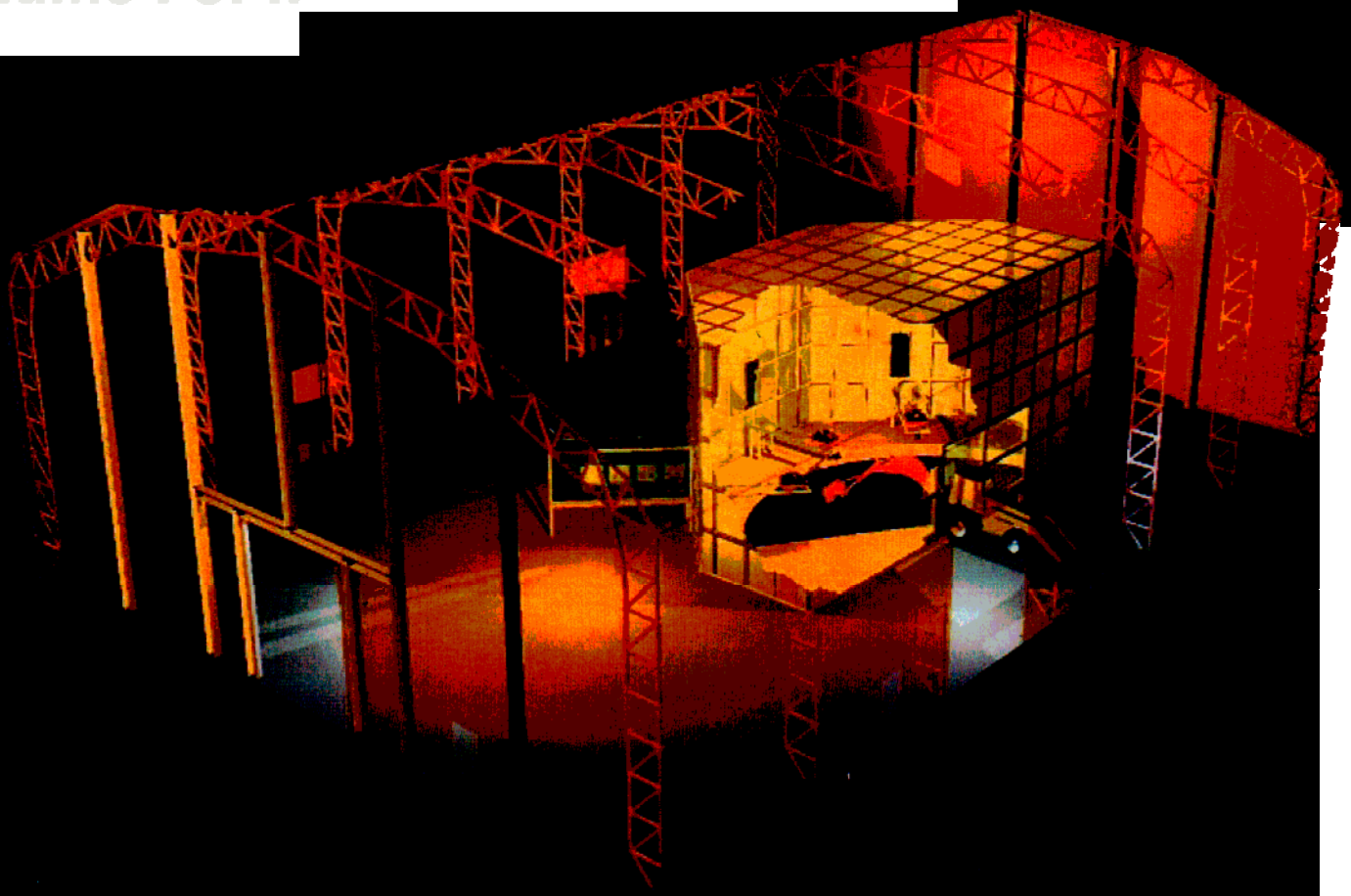
DOE/ID-11032
September 2002

U.S. Department of Energ
Idaho Operations Offic

Remedial Design Package for the OU 7-10 Glovebox Excavator Method Project

Volume I of II



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GA02-508

Idaho National Engineering and Environmental Laboratory

September 20, 2002

CCN 35926

Mr. Jeffrey G. Snook
Project Manager
U.S. Department of Energy
Idaho Operations Office
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Idaho Falls, ID 83401-1563

CONTRACT NO. DE-AC07-99ID13727 - OPERABLE UNIT 7-10 GLOVEBOX EXCAVATOR METHOD PROJECT DOCUMENT TRANSMITTAL OF REMEDIAL DESIGN PACKAGE, VOLUMES I AND II

Dear Mr. Snook:

Enclosed for your review and acceptance is DOE/ID-11032, *Remedial Design Package for the OU 7-10 Glovebox Excavator Method Project, Volumes I and II*, September 2002.

This report is submitted for Department of Energy acceptance in relation to Performance Based Incentive (PBI) -4, Expectation 1.1, Item 6.

If you have any questions or comments, please contact Mike Pratt at 526-5565 or me at 526-2945.

Sincerely,

for Michael J. Graham, Manager of Projects
Environmental Restoration Program

MBP:mp

Enclosure

cc: (w/o Encl)
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bcc: (w/o Encl)
M. B. Pratt, MS 3920
J. M. Schaffer, MS 3920
OU 7-10 Project Files
ARDC Files, MS 3922
OU 7-10 Letter File
Correspondence Control, MS 3106
M. J. Graham File (MJG-204-02)

Uniform File Code: 6400
Disposition Authority: ENV1-k-2-b
Retention Schedule: Cutoff at project completion. Destroy 25 years after project completion. EPI

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DOE/ID-11032
Revision 0

Remedial Design Package for the OU 7-10 Glovebox Excavator Method Project

September 2002

Idaho National Engineering and Environmental Laboratory
Environmental Restoration Program
Idaho Falls, Idaho 83415

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

Remedial Design Package for the OU 7-10 Glovebox Excavator Method Project

DOE/ID-11032
Revision 0

September 2002

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9/27/02
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INEEL

ABSTRACT

The OU 7-10 Glovebox Excavator Method Project is required to submit to the U.S. Environmental Protection Agency and the Idaho Department of Environmental Quality (i.e., the Agencies) a completed Stage II Remedial Design in accordance with the *Agreement to Resolve Disputes, the State of Idaho, United States Environmental Protection Agency, United States Department of Energy* and the *Federal Facilities Agreement and Consent Order*. This narrative and accompanying set of documents comprises the final submittal to complete the Stage II Remedial Design.

The Stage II Remedial Design consists of the completed designs, plans, and specifications for the OU 7-10 Glovebox Excavator Method Project being conducted within the Subsurface Disposal Area of the Radioactive Waste Management Complex at the Idaho National Engineering and Environmental Laboratory. These have been provided to the Agencies in a series of partial submittals (i.e., Critical Decisions –3a, and -3b; Field Sampling Plan, Data Quality Objectives, and Excavation Plan and Sequential Process Narrative draft-document submittal; and Critical Decision –2/3) and in this uniting submittal.

The U.S. Department of Energy chose the glovebox excavator method as a simplified technical approach for accomplishing the Stage II work scope as identified in Appendix A of the *Remedial Design/Remedial Action Scope of Work and Remedial Design Work Plan: Operable Unit 7-10 (Pit 9 Project Interim Action)*. This approach was documented in the *Waste Area Group 7 Analysis of OU 7-10 Stage II Modifications* and presented to the Agencies on September 5, 2001, where it received general concurrence. The OU 7-10 Glovebox Excavator Method Project achieves the objectives of the 1993 *Record of Decision: Declaration of Pit 9 at the Radioactive Waste Management Complex Subsurface Disposal Area at the Idaho National Engineering Laboratory, Idaho Falls, Idaho*, as modified by the 1995 and 1998 Explanation of Significant Difference documents, by demonstrating retrieval of buried transuranic waste. The project work scope includes excavation, retrieval, characterization, packaging, and temporary storage of between 57 and 96 m^3 (75 and 125 yd^3) of transuranic waste from OU 7-10 (Pit 9) at the Idaho National Engineering and Environmental Laboratory. Information and experience obtained from the demonstration retrieval can be used to support the overall activities to remediate transuranic waste buried at Waste Area Group 7, which comprises the Radioactive Waste Management Complex.

The glovebox excavator method consists of a commercial excavator that retrieves waste zone material inside a confinement structure and of gloveboxes connected to the confinement structure that can be used by personnel to safely inspect, sample for characterization, and package the excavated waste zone material. Using this method will eliminate more than 5 years from the original Stage II remediation schedule and approximately 37% from the original Stage II cost estimate while at the same time ensuring safety for workers and the environment.

While this narrative and accompanying set of documents represent the final increment and compilation of a phased remedial design submittal (i.e., incorporating by reference the previous partial submittals), a supplemental submittal will be necessary to address the recent change to the baseline for storing the packaged waste zone material onsite rather than sending it to the Advanced Mixed Waste Treatment Project facility. This supplemental submittal will include only those remedial design elements requiring revision of the technical content as necessitated by the change in work scope.

CONTENTS

ABSTRACT iii

ACRONYMS ix

1. INTRODUCTION 1

1.1 Background 1

2. MISSION NEED 6

2.1 Project Objectives 6

2.1 Comparison of General Objectives 6

3. PURPOSE 8

4. SCOPE 10

5. ENGINEERING DESIGN OUTPUT DOCUMENTS 12

5.1 Critical Decision-1 Submittal (Conceptual Design Report) 12

5.1.1 U.S. Department of Energy Authorization for Critical Decision-1 12
5.1.2 Critical Decision-1 Comment Resolution 12
5.1.3 Critical Decision-1 Comment Resolution Update 12

5.2 Critical Decision-3a Submittal 13

5.2.1 U.S. Department of Energy Authorization for Critical Decision-3a 13
5.2.2 Critical Decision-3a Table of Documents 13
5.2.3 Critical Decision-3a Comment Resolution 13
5.2.4 Critical Decision-3a Revised Documents 13

5.3 Critical Design-3b Submittal 14

5.3.1 U.S. Department of Energy Authorization for Critical Decision-3b 14
5.3.2 Critical Decision-3b Table of Documents 14
5.3.3 Critical Decision-3b Comment Resolution 15
5.3.4 Critical Decision-3b Revised Documents 15

5.4 Critical Decision-2/3 Submittal 15

5.4.1 U.S. Department of Energy Authorization for Critical Decision-2/3 16
5.4.2 Critical Decision-2/3 Table of Documents 16
5.4.3 Critical Decision-2/3 Comment Resolution 16
5.4.4 Critical Decision-2/3 Revised Documents 16

5.5 Supplemental Remedial Design Submittal – Onsite Storage 17

6. OTHER REMEDIAL DESIGN ELEMENTS 18

6.1 Technical and Functional Requirements 18

6.2 System Design Criteria 18

6.3 Major Equipment Identification 19

6.4 Waste Management Plan 19

6.5 Facility Shutdown Plan and Deactivation, Decontamination, and Decommissioning Pre-Plan 19

6.6 Operations Health and Safety Plan 20

7. ADDITIONAL REQUIRED STUDIES 21

7.1 Air Emissions 21

7.1.1 Air Emissions Evaluation 21
7.1.2 National Emission Standards for Hazardous Air Pollutants Radiological Monitoring Plan 21

7.2 Matrix of Applicable or Relevant and Appropriate Requirements 22

7.3 Chemical Compatibility 22

7.4 Data Quality Objectives 22

7.5 Fissile Material Monitoring 22

7.5.1 Fissile Material Monitoring Hardware Summary 23
7.5.2 Fissile Material Monitoring System Description 23

7.6 Remedial Action Report Outline 23

7.7 Sampling and Analysis 23

7.7.1 Field Sampling Plan 24
7.7.2 Environmental Restoration Quality Assurance Project Plan 24

7.8 Waste Material Processes 24

7.8.1 Excavation Plan and Sequential Process Narrative 24
7.8.2 Waste Categorization Matrix 25
7.8.3 Fissile Material Inventory 25
7.8.4 Fissile Material Disposition 25
7.8.5 OU 7-10 Glovebox Excavator Method Project Process Model 25

7.8.6 Process Calculations 26

8. SCHEDULE 27

9. COST ESTIMATE 28

10. OPERATIONS AND MAINTENANCE PLAN 29

11. PREFINAL INSPECTION CHECKLIST 30

12. DOCUMENT INDEXES 31

13. REFERENCES 32

FIGURES

1. Location of the Radioactive Waste Management Complex and other major facilities at the Idaho National Engineering and Environmental Laboratory 2

2. Graphic of the Subsurface Disposal Area at the Radioactive Waste Management Complex showing an expanded view of the OU 7-10 Glovebox Excavator Method Project area 3

TABLES

1. A comparison of Stage II and OU 7-10 Glovebox Excavator Method Project objectives 7

ACRONYMS

AEE	air emissions evaluation
AMWTP	Advanced Mixed Waste Treatment Plant
ARAR	applicable or relevant and appropriate requirement
CD	critical decision
CDR	conceptual design report
CERCLA	Comprehensive Environmental, Response, Compensation and Liability Act
CFR	*Code of Federal Regulations*
D&D&D	deactivation, decontamination, and decommissioning
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
DQO	data quality objective
EDF	engineering design file
EPA	U.S. Environmental Protection Agency
ESD	explanation of significant differences
FFA/CO	Federal Facility Agreement and Consent Order
FGE	fissile gram equivalent
FMM	fissile material monitoring
FSP	field sampling plan
FY	fiscal year
GDE	guide
HASP	health and safety plan
IDEQ	Idaho Department of Environmental Quality
INEEL	Idaho National Engineering and Environmental Laboratory
LMAES	Lockheed Martin Advanced Environmental Systems
LST	list
MCP	management control procedure
O&M	operations and maintenance

OU	operable unit
PGS	Packaging Glovebox System
PLN	plan
QAPjP	quality assurance project plan
RD/RA	remedial design and remedial action
ROD	record of decision
SOW	scope of work
SPC	specification
SWEPP	Stored Waste Examination Pilot Plant
T&FR	Technical and Functional Requirements document
TFR	technical and functional requirement
WAG	waste area group
WES	Weather Enclosure Structure
WMF	Waste Management Facility

Remedial Design Package for the OU 7-10 Glovebox Excavator Method Project

1. INTRODUCTION

This narrative describes the full and complete remedial design package for the Operable Unit (OU) 7-10 Glovebox Excavator Method Project waste retrieval demonstration. It provides a framework for the collection of previous partial submittals (i.e., Critical Decisions [CD] –3a, and -3b; Field Sampling Plan (FSP), Data Quality Objectives, and Excavation Plan and Sequential Process Narrative draft-document submittal; and CD–2/3) as well as the remaining required elements. This narrative and accompanying set of documents comprises the final submittal to complete the Stage II Remedial Design.

Operable Unit 7-10 (which comprises Pit 9) is located in the Subsurface Disposal Area within the Radioactive Waste Management Complex at the Idaho National Engineering and Environmental Laboratory (INEEL). The location of the Radioactive Waste Management Complex is in Figure 1. Figure 2 shows the project area within the Subsurface Disposal Area.

1.1 Background

Documentation of OU 7-10 has been extensive. The *Record of Decision: Declaration of Pit 9 at the Radioactive Waste Management Complex Subsurface Disposal Area at the Idaho National Engineering Laboratory, Idaho Falls, Idaho* (DOE-ID 1993), two explanation of significant differences (ESDs) documents (DOE-ID 1995; 1998), a remediation subcontractor termination, and an 18,000-page remedial design and remedial action (RD/RA) work plan with a 90% design submittal[a] have been completed in association with OU 7-10. Following is an overview of OU 7-10 history that identifies the purposes and major changes of these pertinent documents.

The Idaho National Engineering and Environmental Laboratory (INEEL) actively placed Rocky Flats Plant[b] and INEEL waste material in OU 7-10 from 1967 until OU 7-10 was closed in 1969. In 1989, the INEEL was placed on the "National Priorities List of Uncontrolled Hazardous Waste Sites; Final Rule" (54 FR 48184) and the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (DOE-ID 1991) specifically identified OU 7-10 for an interim action.

In 1993, the OU 7-10 Record of Decision (ROD) (DOE-ID 1993) was signed. The associated *Remedial Design/Remedial Action Scope of Work and Remedial Design Work Plan: Operable Unit OU 7-10 (Pit 9 Project Interim Action)* (EG&G 1993) documented the schedule and approach for implementation of the OU 7-10 ROD, and the U.S. Department of Energy (DOE) management and operating contractor subcontracted with Lockheed Martin Advanced Environmental Systems (LMAES) to perform the OU 7-10 Scope of Work (SOW) (EG&G 1993).

The INEEL revised the OU 7-10 SOW in 1995 (LMITCO 1995) to address details for design, construction, and operation approaches. This resulted in significant changes in the OU 7-10 ROD cost

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a. DOE-ID, 2000, "Draft Operable Unit 7-10 (OU 7-10) Staged Interim Action Project, Stage II, RD/RA Work Plan Primary Deliverable Submittal," DOE/ID-10767, Binder I-A, "Remedial Design/Remedial Action Work Plan for Stage II of the Operable Unit 7-10 (OU 7-10) Staged Interim Action Project," U.S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho.

b. The Rocky Flats Plant is located 26 km (16 mi) northwest of Denver. In the mid 1990s, the Rocky Flats Plant was renamed the Rocky Flats Plant Environmental Technology Site. In the late 1990s it was renamed again, to its current name, the Rocky Flats Plant Closure Project.

estimates, which in turn required the issuance of an *Explanation of Significant Differences for the Pit 9 Interim Action Record of Decision at the Radioactive Waste Management Complex at the Idaho National Engineering Laboratory* (DOE-ID 1995).

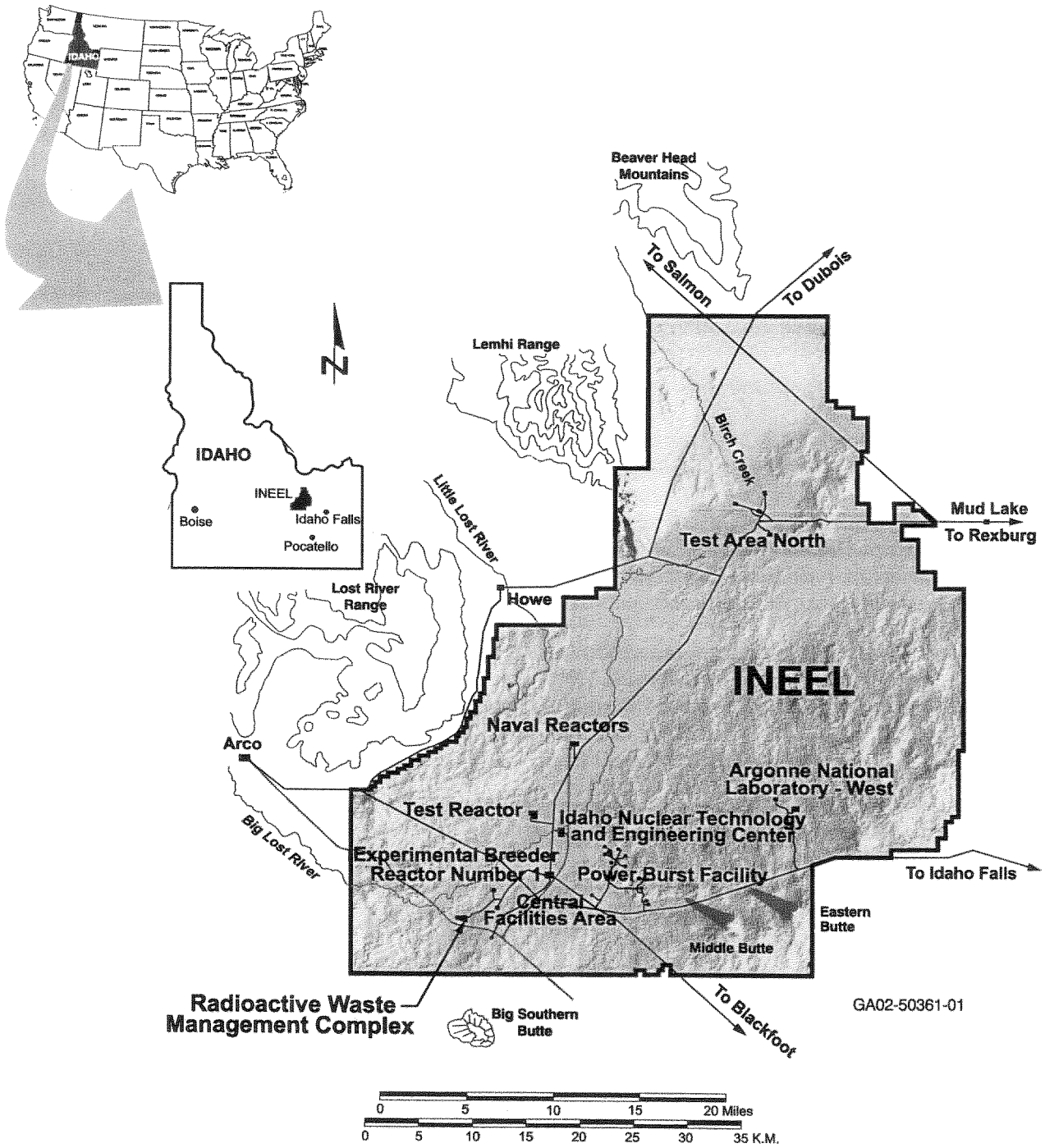

Figure 1. Location of the Radioactive Waste Management Complex and other major facilities at the Idaho National Engineering and Environmental Laboratory.

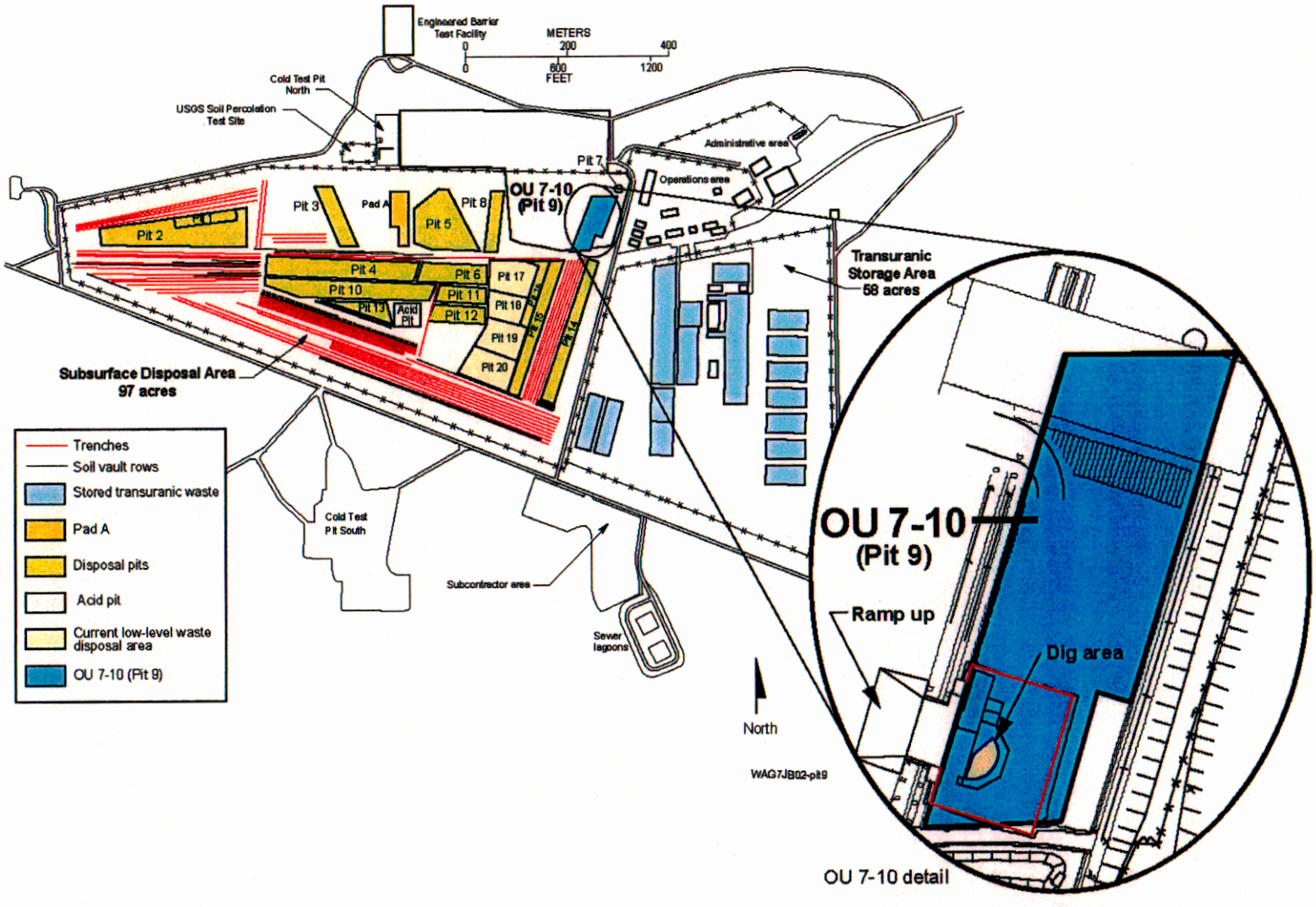

Figure 2. Graphic of the Subsurface Disposal Area at the Radioactive Waste Management Complex showing an expanded view of the OU 7-10 Glovebox Excavator Method Project area.

The DOE prepared a contingency plan to accommodate the possibility that LMAES might not fulfill the terms of the OU 7-10 SOW (EG&G 1993). This contingency plan developed into the staged interim action approach formalized in the revised OU 7-10 SOW, *Remedial Design/Remedial Action Scope of Work and Remedial Design Work Plan: Operable Unit OU 7-10 (Pit 9 Project Interim Action)* (LMITCO 1997), issued in 1997. The revised OU 7-10 SOW (LMITCO 1997) identified performance objectives, milestones, and deliverables in the event that the LMAES contract was not completed. The LMAES contract was subsequently terminated and the INEEL began work on the Staged Interim Action Project.

The 1998 ESD to the OU 7-10 ROD (DOE-ID 1998), which launched the Staged Interim Action Project, also formalized the adoption of the three-stage (i.e., Stages I, II, and III) approach to satisfy the requirements of the OU 7-10 ROD, its two associated ESDs, and the RD/RA SOW (LMITCO 1997). Also in 1998, the *OU 7-10 Staged Interim Action Project System Requirements Document* (LMITCO 1998a) and the *OU 7-10 RD/RA Contingency Program Stage II Technical and Functional Requirements Document* (LMITCO 1998b) identified the project requirements and traced them to the OU 7-10 ROD, the 1995 and 1998 ESDs, and the RD/RA SOW (LMITCO 1997).

The three stages of the Staged Interim Action Project were to be as follows:

- **Stage I** involved subsurface exploration of OU 7-10 to support siting of Stage II.
- **Stage II** involved the retrieval of a select area of OU 7-10 including a waste retrieval demonstration, characterization of waste zone material and soils, and storage of retrieved waste zone material. Stage II also included design and construction, excavation and retrieval, and sampling, packaging, and storage of materials.
- **Stage III** was to perform the overall remediation of OU 7-10 using information from Stage II.

The requirements applying to all three stages of the OU 7-10 Staged Interim Action Project were identified in the Systems Requirement Document (LMITCO 1998a), while the Stage II Technical and Functional Requirements (T&FR) document (LMITCO 1998b) defined the Stage II scope and activities. Following the formal review and acceptance of both documents, the Stage II T&FR (LMITCO 1998b) became the technical baseline, which was used to develop the conceptual (10%), Title I (30%), and Title II (90%) designs. The Title II design for Stage II was submitted on June 30, 2000, as part of the RD/RA work plan (see footnote a).

While the Stage II design met all technical requirements, the associated project schedule did not meet the enforceable deadline for completion of the remedial action report. The DOE requested a schedule extension that was denied by the State of Idaho and resulted in a formal dispute. As part of the dispute resolution process, alternate concepts to demonstrate retrieval were developed that reduced the schedule and, in some cases, modified the overall project objectives from those of the Stage II project. These alternate concepts were documented in *Waste Area Group 7 Analysis of OU 7-10 Stage II Modifications* (INEEL 2001). The concept selected was the glovebox excavator method. The dispute was settled in April 2002. The *Agreement to Resolve Disputes, the State of Idaho, United States Environmental Protection Agency, United States Department of Energy* (DOE 2002) reconfirmed the glovebox excavator method for accomplishing the project mission and established enforceable milestones for the project.

Following completion of the glovebox excavator method conceptual design in January 2002, the INEEL and DOE used a phased approach for completing the detailed design and for obtaining

procurement and construction authorization. This phased approach was necessary to meet schedule objectives and consisted of CD-3a, -3b, and -2/3 milestones. At each of these milestones, which occurred between April and July 2002, the INEEL and DOE provided the design output documents to the U.S. Environmental Protection Agency (EPA) and the Idaho Department of Environmental Quality (IDEQ) (i.e., the Agencies) for review. In addition, the INEEL and DOE provided the Agencies with design support documents and other documents in areas of specific interest to the Agencies (e.g., fissile material monitoring, ventilation system design, structural design, and emissions monitoring).

2. MISSION NEED

2.1 Project Objectives

The INEEL published the *Waste Area Group 7 Analysis of OU 7-10 Stage II Modifications* (INEEL 2001) report on October 1, 2001. This report identifies a feasible approach for retrieving a limited volume of waste zone material from OU 7-10. Establishing the OU 7-10 Glovebox Excavator Method Project accomplishes the objectives presented in that report and fulfills the requirements of the U.S. Department of Energy Idaho Operations Office (DOE-ID) as found in the Federal Facility Agreement and Consent Order (FFA/CO) (DOE-ID 1991), the OU 7-10 ROD (DOE-ID 1993), the 1998 ESD (DOE-ID 1998), and Appendix A of the OU 7-10 SOW (EG&G 1993). The overall objectives for the project are as follows (i.e., reflecting the recent baseline change for onsite storage):

Project Objectives

- Demonstrate waste retrieval
- Provide information on contaminants
- Characterize waste material for storage
- Package and store waste zone material onsite, pending decision on final disposition.

- Demonstrate waste zone material retrieval
- Provide information on any contaminants of concern present in the underburden
- Characterize waste zone material for safe and compliant storage
- Package and store waste zone material onsite, pending decision on final disposition.

2.1 Comparison of General Objectives

The *Technical and Functional Requirements for the OU 7-10 Glovebox Excavator Method Project* document (INEEL 2002a) establishes the technical baseline for the project. The requirements in Revision 3 of the T&FR document (INEEL 2002a) are intended to meet the joint objectives of the DOE-ID, the EPA, and the IDEQ.

Revision 3 of the T&FR document (INEEL 2002a) defines the requirements for the project and captures the overall project objectives for retrieving, packaging, and temporarily storing the waste zone material excavated from the project site located in a preselected area of OU 7-10. The selection of the glovebox excavator method concept, as discussed in Section 1, introduced a more simplified set of objectives than those used for Stage II of the OU 7-10 Staged Interim Action Project. A comparison of the general objectives from the defining Comprehensive Environmental, Response, Compensation and Liability Act (CERCLA) (42 USC § 9601 et seq.) documents (i.e., the 1993 ROD, the 1995 and 1998 ESDs, and the RD/RA SOW [LMITCO 1997]) to the current objectives for the OU 7-10 Glovebox Excavator Method Project is shown in Table 1.

Table 1. A comparison of Stage II and OU 7-10 Glovebox Excavator Method Project objectives.

Agency Documents Stage II	OU 7-10 Glovebox Excavator Method Project
Obtain information to support the WAG 7 decision process including characterization and treatability information.	The retrieval demonstration in OU 7-10 (Pit 9) will provide information on contaminants of concern present in the OU 7-10 underburden.
Obtain characterization information.	Characterization of waste zone material will support safe and compliant storage. Data will be used for certification of the material to the waste acceptance criteria of the onsite storage facility. Underburden will be sampled for transuranic contaminants and chemical analysis.
Include treatability study testing.	Treatability study testing has been deferred.
Develop information to support the design and operation of a Stage III system that will meet the requirements established in the Pit 9 ROD.[a]	Retrieval is to demonstrate the ability to retrieve waste zone materials. Data from the project will be used for establishing the path forward.
Stage II activities include design, construction, startup activities, excavation, and retrieval of waste and soils from Pit 9.	The retrieval demonstration will make use of one OU 7-10 location and will not be designed to be relocated.
Remove approximately 200 yd^3 of containerized waste and interstitial soil from the 20 × 20-ft area.	The excavation volume will be between 75 and 125 yd^3 of waste zone materials. Underburden will not be excavated. Samples of underburden will be collected.
Materials that are not returned to the pit as part of Stage II will be containerized.	Retrieved waste zone materials will be containerized.
Retrieved materials not returned to the pit are staged for further sampling within the area of contamination, pending final disposition.	Retrieved waste zone materials will be characterized for safe interim storage and for acceptance by the onsite storage facility.
Includes both primary and secondary confinement.	A weather enclosure surrounds a confinement structure.

a. DOE-ID, 1993, *Record of Decision: Declaration of Pit 9 at the Radioactive Waste Management Complex Subsurface Disposal Area at the Idaho National Engineering Laboratory, Idaho Falls, Idaho*, Administrative Record No. 5569, U.S. Department of Energy Idaho Operations Office; U.S. Environmental Protection Agency, Region 10; and State of Idaho Department of Health and Welfare.

OU = operable unit ROD = record of decision WAG = waste area group

3. PURPOSE

The purpose of this submittal (i.e., narrative and the accompanying set of documents) is to provide the Agencies with the final elements of the Stage II Remedial Design. The complete OU 7-10 Glovebox Excavator Method Project Remedial Design consists of this submittal and the following, which are incorporated herein by reference:

- Critical Decision (CD) -3a submittal[c]
- CD-3b submittal[d]
- "Field Sampling Plan for the OU 7-10 Glovebox Excavator Method Project (Draft),"[e] "OU 7-10 Glovebox Excavator Method Project Data Quality Objectives (Draft),"[f] and "Excavation Plan and Sequential Process Narrative for the OU 7-10 Glovebox Excavator Method Project (Draft)"[g] draft-document submittal
- CD-2/3 submittal.[h]

The compilation of these submittals communicates the completed designs, plans, and specifications for the OU 7-10 Glovebox Excavator Method Project being conducted at the INEEL and fulfills the requirements for the Stage II Remedial Design (completed project design) as identified in Paragraph 3.1.3 of the Agreement to Resolve Disputes (DOE 2002).

The purpose of this narrative is to:

- Provide a framework for uniting the completed remedial design package including elements submitted with this narrative and those previously submitted

---

c. Dirkmaat, Peter J., to Warren E. Bergholz, April 18, 2001, "Approval of Criticl Decision (CD-3a) Early procurement and site utilities work for OU 7-10 Glovebox Excavator Method (GEM) Project located at the Radioactive Waste Management Complex at the Idaho National Engineering and Environmental Laboratory (INEEL)," EM-INTEC-02-021, U.S. Department of Energy Idaho Operations Office.

d. Snook, Jeff, to Warren E. Bergholz, May 20, 2002, "Approval of Critical Decision (CD) 3b for the Glovebox Excavator Method (GEM) Project," EM-ER-02-089, U.S. Department of Energy Idaho Operations Office.

e. Salomon, Hopi, Daryl R. Haefner, Beth A. McIlwain, Jila Banaee, Jeffrey J. Einerson, and Anna K. Podgorney, 2002, "Field Sampling Plan for the OU 7-10 Glovebox Excavator Method Project (Draft)," INEEL/EXT-02-00542, Rev. B, Idaho National Engineering and Environmental Laboratory, Bechtel BWXT Idaho, LLC, Washington Group International, Idaho Falls, Idaho, July 2002.

f. McIlwain Beth A., 2002, "OU 7-10 Glovebox Excavator Method Project Data Quality Objectives (Draft)," INEEL/EXT-02-00660, Rev. B, Idaho National Engineering and Environmental Laboratory, Bechtel BWXT Idaho, LLC, Idaho Falls, Idaho, July 2002.

g. Jamison, R. Kirt, and Brian D. Preussner, 2002, "Excavation Plan and Sequential Process Narrative for the OU 7-10 Glovebox Excavator Method Project, (Draft)," INEEL/EXT-02-00703, Rev. B, Idaho National Engineering and Environmental Laboratory, Bechtel BWXT Idaho, LLC, Idaho Falls, Idaho, August 2002.

h. Snook, Jeff, to Warren E. Bergholz, June 26, 2002, "Approval of Critical Decision (CD) 2/3 for the Glovebox Excavator Method (GEM) Project," EM-ER-02-105, U.S. Department of Energy Idaho Operations Office.

- Demonstrate that all of the required remedial design elements have been provided to the Agencies through a crosswalk that maps the required elements to the implementing project documents
- Help readers to locate various elements within this remedial design submittal
- Introduce individual elements of the remedial design including identification of significant changes, where applicable, to previously submitted documents.

Note: The project does not plan to resubmit previously submitted elements of the remedial design (e.g., those provided for CDs-3a, 3b, and 2/3) unless significant changes have been made. As such, the binders (i.e., Volumes I and II) that accompany this narrative will include only the remaining remedial design elements and any elements that have undergone significant change. The term "significant change" as used in this document denotes a change in design intent or analysis.

4. SCOPE

Based on a review of the FFA/CO (DOE-ID 1991), the RD/RA SOW (LMITCO 1997), and Guide (GDE) –72, "Guide for Remedial Design and Remedial Action," the OU 7-10 Glovebox Excavator Method Project defines the Stage II Remedial Design package to include the following:

- Completed design drawings (including revised piping and instrumentation diagrams, process flow diagrams, and general equipment arrangement drawings)
- Completed design specifications
- Comment resolution from previous submittals
- Process volume, flow rates, and quantities
- Major equipment identification
- Design criteria
- Revised applicable or relevant and appropriate requirements (ARARs), to be considered guidance, and permitting considerations
- Results of additional required studies
- Sampling and analysis plan (i.e., a field sampling plan and quality assurance project plan)
- Site health and safety plan
- Schedule
- Cost estimate for remedial action
- Operations and maintenance (O&M) plan
- Prefinal inspection checklist.

These elements were submitted to the Agencies as an annotated outline and received general concurrence following comment resolution.

Paragraph 3.1.3 of the Agreement to Resolve Disputes (DOE 2002) does not require the project to submit a remedial action work plan. However, many of the management and operational elements of a remedial action work plan are being provided as part of the OU 7-10 Glovebox Excavator Method Project Remedial Design package. This is because of (1) overlaps in how the FFA/CO, the 1997 SOW, and GDE-72 define the elements of a remedial design and (2) how the project chose to implement the remedial design element for additional required studies (i.e., providing documents because of interest expressed in certain areas by the Agencies).

While this package represents the final increment and compilation of a phased remedial design submittal, a supplemental submittal will be necessary to address the baseline change for storing the packaged waste zone material onsite rather than sending it to the Advanced Mixed Waste Treatment Project facility. This supplemental submittal will be provided by October 31, 2002, and will include only those remedial design elements that require revision of their technical content caused by the change in work scope.

5. ENGINEERING DESIGN OUTPUT DOCUMENTS

This section introduces the design output elements of the OU 7-10 Glovebox Excavator Method Project Remedial Design, which are organized by submittal (i.e., CDs-3a, -3b, and -2/3), and provides information about the CD-1 submittal (i.e., *OU 7-10 Glovebox Excavator Method Project Conceptual Design Report for Critical Decision 1* [INEEL 2002b]). It provides references to the remedial design elements through tables of documents that identify individual components included in each submittal. In addition, this section provides references to the new or significantly changed elements (where applicable) provided in the accompanying volumes. Comment resolution sheets for completed review and comment cycles are discussed and also included in the accompanying volumes.

Remedial Design Crosswalk

The engineering design output documents referenced in Section 5 satisfy the following required remedial design elements (source in parenthesis):

- Completed design drawings (FFA/CO, 1997 RD/RA SOW, GDE-72)
- Revised piping and instrumentation diagrams (1997 RD/RA SOW)
- Revised general equipment arrangement drawings (1997 RD/RA SOW, GDE-72)
- Completed design specifications (FFA/CO, 1997 RD/RA SOW, GDE-72)
- Comment resolution from previous submittal (i.e., conceptual design) (1997 RD/RA SOW, GDE-72).

5.1 Critical Decision-1 Submittal (Conceptual Design Report)

The Conceptual Design Report (CDR) (INEEL 2002b) and Revision 2 of the T&FRs document (INEEL 2002c) were submitted to the Agencies on January 15, 2002. Comments were received from the Agencies on January 24, 2002, and responses to those comments were provided to the Agencies on March 18, 2002.

5.1.1 U.S. Department of Energy Authorization for Critical Decision-1

An information copy of the DOE letter authorizing the project to proceed past CD-1 is located in Volume I, behind Tab 2.1.

5.1.2 Critical Decision-1 Comment Resolution

The RD/RA SOW (LMITCO 1997) and GDE-72 (i.e., the INEEL RD/RA guidance document) require that the resolution of comments on the preliminary (i.e., 30%) design be included in the remedial design package. Because the project was not required to produce a preliminary design package as a separate deliverable and no associated review was performed, the comment resolution sheets from the Agency review of the CDR have been provided in this submittal. These sheets are located in Volume I, behind Tab 2.2.

5.1.3 Critical Decision-1 Comment Resolution Update

After Title design was completed, the project performed a review of previous responses to Agency comments on the CDR. This review focused on evaluating those responses to ensure that the original comments were resolved in the final design. The results of the review are located in Volume I, behind Tab 2.3, and include a column for updated responses, as applicable.

5.2 Critical Decision-3a Submittal

The CD-3a partial submittal was sent to the Agencies on April 18, 2002. The scope of work in this partial submittal consisted of the following:

- Use of INEEL Force Account personnel to install temporary fencing, relocation and connection of construction office trailers, and general preparation for construction
- Procurement of subcontract construction services to construct the following items:
  - Temporary access ramps and roads
  - Earthwork
  - Electrical tie-ins
  - Firewater tie-ins.
- Procurement of the following:
  - Retrieval confinement structure
  - Packaging Glovebox System (PGS) fissile monitoring equipment.

5.2.1 U.S. Department of Energy Authorization for Critical Decision-3a

An information copy of the DOE letter authorizing the project to proceed with the CD-3a work scope is located in Volume I, behind Tab 3.1.

5.2.2 Critical Decision-3a Table of Documents

The list of documents sent to the Agencies as part of the CD-3a submittal is provided in Volume I, behind Tab 3.2.

5.2.3 Critical Decision-3a Comment Resolution

Formal Agency comments on the CD-3a submittal were received May 10, 2002, and included a total of 63 comments. Responses to these comments were sent to the Agencies on June 18, 2002. The comment resolution sheets for the CD-3a submittal are provided in Volume I, behind Tab 3.3.

5.2.4 Critical Decision-3a Revised Documents

This section addresses changes to CD-3a documents that have occurred since submittal of these documents to the Agencies.

5.2.4.1 Site Preparation and Utilities Package. No changes have been made to Specification (SPC) -352, "Construction Specification: OU 7-10 Glovebox Excavator Method Project Site Development." While minor changes have been made to SPC-358, "A-E Performance Specification: OU 7-10 Glovebox Excavator Method Project Retrieval Confinement Structure," none of these changes were significant (i.e., changes did not affect design intent or analysis). Also, some of the site preparation

and utility drawings that were provided in the CD-3a submittal have been revised,; however, because none of the changes are significant they are not being resubmitted.

5.2.4.2 Packaging Glovebox System Fissile Material Monitoring System. Specifications SPC-355, "Performance Specification: OU 7-10 Glovebox Excavator Fissile Material Monitor," and SPC-360, "OU 7-10 Glovebox Excavator Method Project Design Input for Fissile Material Monitoring System (FMMS)," have been revised to correct an error in the system designation (i.e., changed from Quality Level 3 to Quality Level 4) and to incorporate previously deferred resolutions to Agency comments. The revised specification documents are being resubmitted and can be found in Volume I, behind Tab 3.4. Two new engineering design file (EDF) documents on the fissile material monitoring (FMM) system also are being submitted. These EDFs are discussed in Section 7 as part of the FMM discussion topic.

The FMM system interface drawings provided as part of the CD-3a submittal were preliminary. This information was updated and included in drawings sent as part of the CD-2/3 submittal. No significant changes have been made since the CD-2/3 submittal; therefore, the drawings are not being resubmitted.

5.3 Critical Design-3b Submittal

The CD-3b submittal was sent to the Agencies on May 21, 2002. The scope of work in this partial submittal consisted of the following:

- Use of INEEL Force Account to install the following items:
  - Shoring box
  - Facility Floor Structure
  - Retrieval Confinement Structure
  - Weather Enclosure Structure.
- Procurement of the following:
  - Steel for the shoring box and Facility Floor Structure
  - Weather Enclosure Structure.

Authorization to procure the Retrieval Confinement Structure was accomplished under CD-3a.

5.3.1 U.S. Department of Energy Authorization for Critical Decision-3b

An information copy of the DOE letter authorizing the project to proceed with the CD-3b work scope is located in Volume I, behind Tab 4.1.

5.3.2 Critical Decision-3b Table of Documents

The list of documents sent to the Agencies as part of the CD-3b submittal is provided in Volume I, behind Tab 4.2.

5.3.3 Critical Decision-3b Comment Resolution

Formal Agency comments on the CD-3b submittal were received June 3, 2002, and included a total of 21 comments. Responses to these comments were sent to the Agencies on July 2, 2002. The comment resolution sheets for the CD-3b submittal are provided in Volume I, behind Tab 4.3.

5.3.4 Critical Decision-3b Revised Documents

This section addresses changes to CD-3b documents that have occurred since submittal of these documents to the Agencies.

5.3.4.1 Weather Enclosure Structure Package. Although revised, no significant changes have been made to SPC-364, "A-E Performance Specification: OU 7-10 Glovebox Excavator Method Project Weather Enclosure Structure WMF-671." Also, no changes have been made to the Weather Enclosure Structure package drawings or calculations since their submittal to the Agencies.

5.3.4.2 Facility Floor Structure Fabrication Package. No changes have been made to SPC-366, "A-E Construction Specification: OU 7-10 Glovebox Excavator Method Project Facility Floor Structure Fabrication." In addition, though revised, no significant changes have been made to the Facility Floor Structure fabrication package drawings since submittal to the Agencies.

5.3.4.3 Facility Structures Package. No changes have been made to the specification or drawings in this package since submittal to the Agencies.

5.4 Critical Decision-2/3 Submittal

The CD-2/3 submittal was sent to the Agencies on July 31, 2002. The scope of work covered by this partial submittal consisted of procurement and construction of all project scope materials and services not included in CDs-3a and -3b. Specifically, this includes the following:

- Excavator system
- Packaging gloveboxes
- Facility equipment systems
- Heating and ventilating system
- Exhaust stack and emissions monitoring system
- Dust suppression and fogging system
- Fire detection and protection systems
- Electrical power and lighting systems
- Instrumentation and control systems
- Criticality alarm system
- Closed-circuit television system.

5.4.1 U.S. Department of Energy Authorization for Critical Decision-2/3

An information copy of the DOE letter authorizing the project to proceed with the CD-2/3 work scope is located in Volume I, behind Tab 5.1.

5.4.2 Critical Decision-2/3 Table of Documents

The list of documents sent to the Agencies as part of the CD-2/3 submittal is provided in Volume I, behind Tab 5.2.

5.4.3 Critical Decision-2/3 Comment Resolution

A total of 42 formal Agency comments were received on August 15, 2002, for the CD-2/3 submittal. Responses to these comments were sent to the Agencies on September 17, 2002. The comment resolution sheets for the CD-2/3 submittal are provided in Volume I, behind Tab 5.3.

5.4.4 Critical Decision-2/3 Revised Documents

This section addresses changes to CD-2/3 documents that have occurred since submittal of these documents to the Agencies.

5.4.4.1 Excavator System. The safety-significant portion of the excavator modifications are contained in SPC-351, "Backhoe Safety-Related Modifications for the OU 7-10 Glovebox Excavator Method Project." This specification, although revised once, will not be resubmitted because the changes made were minor. The other excavator modifications are contained in SPC-401, "Backhoe Modifications for the OU 7-10 Glovebox Excavator Method Project." This specification has been revised to add a new task (i.e., equipment and additional modifications) that was previously contained in a separate statement of work. The addition of the new task is deemed significant; therefore, SPC-401 is being resubmitted in its entirety and is located in Volume I, behind Tab 5.4.

Several drawing packages are associated with the excavator system and most have been revised either once or twice. All but one of the changes made have been minor (i.e., did not change the design intent or analysis). The one drawing package that did have a significant change, DWG-519931, was modified to reflect changes in the drum weighing system. Updated Sheets 1, 2, 3, 4, and 6 are being resubmitted herein and are located in Volume I, behind Tab 5.4.

5.4.4.2 Packaging Glovebox System. A mockup of the glovebox is being fabricated by a fabrication contractor using the baseline drawings. Minor problems discovered during this activity are being corrected through a series of changes to the drawings but the specifications have not been changed. The drawing changes are being issued to the PGS fabrication contractor. Because the changes have not affected design intent or analysis, the changed drawings are not being resubmitted.

5.4.4.3 Facility Design. The SPC-389, "Facility Package for the OU 7-10 Glovebox Excavator Method Project," and the related drawing set have not yet been formally changed, while SPC-391, "HEPA Filter Systems for the OU 7-10 Glovebox Excavator Method Project," has had some minor changes. A number of design changes have been identified during the process of bidding the construction contract, and will be incorporated into a revision during October 2002; however, these changes are minor and the specifications and related drawings are not being included in this submittal.

5.4.4.4 Instrumentation and Control. Various general revisions have been made to SPC-392; however, these changes have been determined to be minor and do not meet the criteria for a significant change. The instrumentation and control drawing package has not been changed. Therefore, none of the previously submitted documents in the instrumentation and control package require resubmittal.

5.5 Supplemental Remedial Design Submittal – Onsite Storage

A supplemental remedial design submittal will be necessary to address the baseline change for storing the packaged waste zone material onsite rather than sending it to the Advanced Mixed Waste Treatment Project. The two options being considered to meet the onsite storage needs are (1) WMF-628 and (2) portable storage units. This supplemental submittal will include only those remedial design documents that require revision of their technical content caused by the baseline change. This submittal is pending and will be made before October 31, 2002.

The supplemental remedial design submittal is expected to include the following elements:

- Table of documents
- Revised plot plan of project area showing assay trailer location

Note: The plot plan will include the location of portable storage units if that is the selected option.

- Revised electrical power one-line diagram(s) for lighting and, possibly ventilation, of the portable storage units
- Drum assay system performance specification
- Catalog cut sheets for standard (i.e., off-the-shelf) portable storage units
- Revised field sampling plan
- Revised data quality objectives
- Revised excavation plan and sequential process narrative
- Revised system design criteria document(s)
- Revised facility shutdown plan and deactivation, decontamination, and decommissioning (D&D&D) preplan
- Other documents, as determined to be necessary.

6. OTHER REMEDIAL DESIGN ELEMENTS

This section introduces other (i.e., nondesign output) required elements of the Stage II Remedial Design and provides references to where these documents can be found in the accompanying volumes. Additionally, some required remedial design elements (e.g., process flow diagrams and volume, flow rate, and quantity estimates) are introduced and discussed in Section 7 for the purpose of keeping together the related discussion topics.

Remedial Design Crosswalk

The documents referenced in Section 6 satisfy the following required RD elements:

- Design criteria (GDE-72)
- Major equipment identification (1997 RD/RA SOW, GDE-72)
- Site health and safety plan (FFA/CO, GDE-72).

6.1 Technical and Functional Requirements

Revision 3 of the project T&FR document (INEEL 2002a) established the technical baseline for the project. The requirements in Revision 3 of the T&FR document (INEEL 2002a) are intended to meet the joint objectives of the DOE-ID, EPA, and IDEQ. This T&FR defines the requirements for the project and captures the overall project objectives for retrieving, packaging, and storing the waste zone material excavated from the project site located in a preselected area of OU 7-10.

Revision 3 of the T&FR (INEEL 2002a) is included to support submittal of a complete set of design criteria and is located in Volume I, behind Tab 6.1. This revision incorporates the following:

- Agency comments received as part of the CDR review
- Onsite storage baseline change
- Addition of shutdown, layup, and D&D&D work scopes
- Other changes brought about during the design process.

A change log between Revision 2 and Revision 3 also has been added to the T&FR document as Appendix A.

6.2 System Design Criteria

The OU 7-10 system design criteria documents establish the design criteria for the OU 7-10 Glovebox Excavator Method Project and augment the requirements contained in the project T&FR. These criteria enable performance of the project detailed design, engineering, and associated evaluation activities. The system design criteria are being provided to satisfy the design criteria element in accordance with INEEL RD/RA guidance and are organized as follows:

- Technical and Functional Requirement (TFR) -152, "System Design Criteria for the OU 7-10 Glovebox Method Project: Packaging Design Criteria," – Volume I, Tab 6.2.1

- TFR-153, "System Design Criteria for the OU 7-10 Glovebox Method Project: Excavation Design Criteria," – Volume I, Tab 6.2.2

- TFR-154, "System Design Criteria for the OU 7-10 Glovebox Method Project: General Structures and Site Design Criteria," – Volume I, Tab 6.2.3

- TFR-155, "System Design Criteria for the OU 7-10 Glovebox Method Project: Instrumentation and Control Design Criteria," – Volume I, Tab 6.2.4

- TFR-156, "System Design Criteria for the OU 7-10 Glovebox Method Project: Facilities and Infrastructure Design Criteria," – Volume I, Tab 6.2.5

- TFR-157, "System Design Criteria for the OU 7-10 Glovebox Method Project: Fire Protection Design Criteria," – Volume I, Tab 6.2.6

- TFR-158, "System Design Criteria for the OU 7-10 Glovebox Method Project: Process Design Criteria,"– Volume I, Tab 6.2.7.

6.3 Major Equipment Identification

List (LST) -245, "Major Equipment Identification List for the OU 7-10 Glovebox Excavator Method Project," contains a list of the major structures, systems, components, and materials used to accomplish the project objectives. This list can be found in Volume I, behind Tab 6.3, and satisfies the RD/RA SOW (LMITCO 1997) and GDE-72 requirements for the identification of major equipment items.

6.4 Waste Management Plan

The "Waste Management Plan for the Operable Unit 7-10 Glovebox Excavator Method Project (Draft),"[i] is prepared to satisfy waste management planning requirements of DOE Manual 435.1-1, "Radioactive Waste Management Manual," and scope requirements of the RD/RA SOW (LMITCO 1997). The Waste Management Plan is submitted for agency review and comment to ensure basic agreement and understanding of waste management planning for the project. It should be noted that this plan reflects the recent baseline change to use Waste Management Facility (WMF) -628 in place of the Advanced Mixed Waste Treatment Project facility for storing packaged waste zone materials and also provides for storage of contaminated waste streams in onsite CERCLA storage, as needed. The Waste Management Plan is located in Volume I, behind Tab 6.4.

6.5 Facility Shutdown Plan and Deactivation, Decontamination, and Decommissioning Pre-Plan

The "OU 7-10 Glovebox Excavator Method Project Facility Shutdown Plan and Deactivation, Decontamination, and Decommissioning Pre-Plan" (PLN-343) describes the approach that the INEEL will use for shutting down and dispositioning the project facility following completion of the waste

i. INEEL, 2002, "Waste Management Plan for the OU 7-10 Glovebox Excavator Method Project (Draft)," INEEL/EXT-02-00767, Rev. B, Idaho National Engineering and Environmental Laboratory, Bechtel BWXT Idaho, LLC, Idaho Falls, Idaho, September 2002.

retrieval demonstration objectives. The D&D&D Pre-Plan (PLN-343) builds on the planning that was started in the CDR (INEEL 2002b) and describes in further detail the activities, methods, and equipment to be used as well as the intermediate and ending conditions to be achieved. The D&D&D Pre-Plan also provides preliminary information on the (1) types of waste expected to be generated during the D&D&D phase, (2) rough orders of magnitude volume estimates of D&D&D waste generated, and (3) anticipated disposition paths.

This D&D&D Pre-Plan is included in this remedial design submittal to provide additional information relative to post-retrieval life cycle phases and for closure of certain Agency comments on the CDR. This plan is located in Volume I, behind Tab 6.5.

6.6 Operations Health and Safety Plan

The "Health and Safety Plan for OU 7-10 Glovebox Excavator Method Project Operations (Draft)"[j] is provided in this remedial design submittal to satisfy a requirement in the FFA/CO (DOE-ID 1991) as well as a GDE-72 recommendation. This health and safety plan (HASP) is provided in draft for Agency review and comment and is located in Volume I, behind Tab 6.6. The HASP establishes the procedures and requirements used to eliminate or minimize health and safety risks to personnel performing operational tasks within the OU 7-10 Glovebox Excavation Method Project operational areas.

The Operations HASP has been prepared to meet Occupational Safety and Health Administration (OSHA) *Code of Federal Regulations* (CFR) standard, 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response Requirements." The HASP contains the assessment and associated mitigation of safety, health, and radiological hazards for conducting operational activities within the project operations area. Safety, health, and radiological professionals assigned to support project operations will define the most appropriate hazard control and mitigation measures based on operations-specific conditions and will make changes to this plan and associated work control documents as appropriate.

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j. INEEL, 2002, "Health and Safety Plan for OU 7-10 Glovebox Excavator Method Project Operations (Draft)," INEEL/EXT-02-01117, Rev. B, Idaho National Engineering and Environmental Laboratory, Bechtel BWXT Idaho, LLC, Idaho Falls, Idaho, September 2002.

7. ADDITIONAL REQUIRED STUDIES

This section introduces and discusses topics that the OU 7-10 Glovebox Excavator Method Project understands to be of particular interest to the Agencies (e.g., air emissions, ARARs, chemical compatibility, data quality objectives [DQOs], FMM, sampling and analysis, and waste process flows and quantity estimates). Some areas of discussion overlap required remedial design elements but are included here, grouped by subject and arranged alphabetically, to promote clarity and completeness of discussions.

Remedial Design Crosswalk

The documents referenced in Section 7 satisfy the following required remedial design elements:

- Revised process volume, flow rates, and quantities (1997 RD/RA SOW, GDE-72)
- Revised process flow diagrams (1997 RD/RA SOW, GDE-72)
- Revised ARARs, TBCs, and permitting considerations (GDE-72)
- Results of additional required studies (FFA/CO, GDE-72)
- Sampling and Analysis Plan (i.e., a field sampling plan and quality assurance project plan) (FFA/CO, GDE-72).

7.1 Air Emissions

The project is submitting two documents that relate to air emissions as additional required studies. The project has determined these documents to be of particular interest to the Agencies based on past discussions and comment resolutions.

7.1.1 Air Emissions Evaluation

The *Air Emissions Evaluation for the OU 7-10 Glovebox Excavator Method Project* (Abbott 2002) is submitted to document estimates of radionuclide and nonradionuclide contaminant emissions that are associated with project operations. The Air Emissions Evaluation (AEE) (Abbott 2002) compares expected emissions to relevant regulatory criteria and calculates estimates of short-term risk associated with the estimated emissions. The AEE (Abbott 2002) is submitted for agency information and records. The AEE includes information that resolves previous EPA and IDEQ comments received on the previous draft version of the document and is therefore considered final. The AEE is provided in Volume II, behind Tab 7.1.1.

7.1.2 National Emission Standards for Hazardous Air Pollutants Radiological Monitoring Plan

The "National Emission Standards for Hazardous Air Pollutants Monitoring of the OU 7-10 Glovebox Excavator Method Project"[k] implements the National Emission Standards for Hazardous Air Pollutants (NESHAP) Method 114 quality requirements for radionuclide emissions monitoring. The OU 7-10 NESHAPs draft document is submitted for agency review and comment and provides implementation details associated with implementing project ARARs for monitoring releases of radionuclide emissions. The OU 7-10 NESHAPs draft document is provided in Volume II, behind Tab 7.1.2.

k. DOE-ID, 2002, "National Emission Standards for Hazardous Air Pollutants Monitoring of the OU 7-10 Glovebox Excavator Method Project," DOE/ID-11016, Rev. A, U.S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho, July 2002.

7.2 Matrix of Applicable or Relevant and Appropriate Requirements

In accordance with GDE-72, the revised ARARs, to be considered guidance, and permitting considerations are recommended elements of the remedial design. The "Applicable or Relevant and Appropriate Requirements Implementation Matrix for the OU 7-10 Glovebox Excavator Method Project (Draft)"[1] EDF is being submitted as the implementing document for this element. The matrix documents the subset of ARARs that apply to the project work scope. The draft OU 7-10 ARARs EDF is submitted for agency review and comment and also satisfies scope requirements of the RD/RA SOW (LMITCO 1997) and the FFA/CO (DOE-ID 1991). The draft OU 7-10 ARARs EDF is provided in Volume II, behind Tab 7.2.

7.3 Chemical Compatibility

The *Evaluation of Chemical Compatibilities of the OU 7-10 Glovebox Excavator Method Project* (Dick and Burton 2002) is being submitted as part of this remedial design as an additional required study. The project has determined that this evaluation is likely to be of interest to the Agencies based on past discussions and comment resolutions and is provided in Volume II, behind Tab 7.3.

The Evaluation of Chemical Compatibilities document (Dick and Burton 2002) presents an evaluation of the potential for incompatible chemical reactions in the waste inventory in OU 7-10. In this evaluation, the range of possible chemical combinations that could occur (i.e., binary combinations) during excavation, repackaging, and storage are considered. Potential adverse chemical reactions (e.g., generation of fire, explosion, heat, or fumes) that stem from combining the waste inventory chemicals are also assessed.

7.4 Data Quality Objectives

The DQO document (see footnote f) was submitted for Agency review and comment on July 11, 2002. This document analyzed the TFRs and developed DQOs for the project design process.

The draft OU 7-10 DQO document is currently being revised to incorporate responses to Agency comments and to reflect the new scope for storing the packaged waste zone materials onsite rather than at the Advanced Mixed Waste Treatment Project (AMWTP) facility. The comment resolution sheets are being provided in place of the revised document, which is planned to be submitted to the Agencies in October 2002 as a part of the supplemental remedial design submittal. The comment resolution sheets can be found in Volume II, behind Tab 7.4.

7.5 Fissile Material Monitoring

The project is submitting two documents that relate to the FMM system as additional required studies. The project has determined these documents to be of particular interest to the Agencies, based on past discussions and comment resolutions. These documents are provided in addition to the revised FMM specifications discussed in Section 5.2.4 of this remedial design narrative.

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1. Burton, Brent N., 2002, "Applicable or Relevant and Appropriate Requirements Implementation Matrix for the OU 7-10 Glovebox Excavator Method Project (Draft)," EDF-2324, Rev. A., Idaho National Engineering and Environmental Laboratory, Bechtel BWXT Idaho, LLC, Idaho Falls, Idaho, September 2002.

7.5.1 Fissile Material Monitoring Hardware Summary

The *OU 7-10 Fissile Material Monitor Hardware Summary* (Akers and May 2002) describes the integrated FMM system that has been developed for the three PGS gloveboxes. The FMM system is the system used for monitoring certain waste forms that are suspected of containing significant amounts of fissile material to prevent overloading a drum relative to the established 200 fissile gram equivalent (FGE) limit. The FMM Hardware Summary EDF (Akers and May 2002) (provided in Volume II, behind Tab 7.5.1) presents the hardware necessary to configure a fully functional system and was used by mechanical and electrical design engineering to complete the design of the glovebox systems.

7.5.2 Fissile Material Monitoring System Description

The *Fissile Material Monitor System Description for the OU 7-10 Glovebox Excavator Method Project* (Akers 2002) provides a detailed description of the FMM measurement system components and the mechanical hardware design for the detector, collimator, and glovebox components. The objective of the FMM system is to provide a stand-alone assay system that can be calibrated and operated by an operations technician with limited training on the device. The operator interface requirements are also defined in this report. The OU 7-10 FMM EDF (Akers 2002) is provided in Volume II, behind Tab 7.5.2

7.6 Remedial Action Report Outline

A proposed outline for the OU 7-10 Glovebox Excavator Method Project Remedial Action report is located in Volume II, behind Tab 7.6. The outline reflects a project plan to combine the Remedial Action Report and the O&M Report as discussed previously for the Staged Interim Action Project – Stage II effort. Combining these reports into a single primary deliverable will require performing the final inspection after completion of the majority of O&M activities (i.e., transfer of the facility to the INEEL Inactive Sites organization for D&D&D). Therefore, an intermediate inspection is planned in place of the final inspection that was to occur upon completion of excavation activities. This intermediate inspection would provide the opportunity for Agency project managers to concur with the project that associated retrieval and underburden sampling objectives have been met. Combining the reports will fit more closely with the nature of the project (i.e., short duration of the project performance period) and will allow more time for summary of the data and subsequent production of the primary deliverable. The proposed outline combines the required elements as identified in the FFA/CO, RD/RA SOW (LMITCO 1997), and GDE-72 for the contents of these two reports. The remedial design comment resolution process will be used to reach agreement on the combination of these two documents as well as the contents and structure of the primary deliverable.

7.7 Sampling and Analysis

The project is submitting two documents (i.e., an FSP and a Environmental Restoration Quality Assurance Project Plan [QAPjP]) that relate to sampling and analysis as additional required studies. The project has determined these documents to be of particular interest to the Agencies based on past discussions and comment resolutions. In addition, these documents fulfill an FFA/CO requirement for submitting a QAPjP and a related GDE-72 recommendation for submitting a sampling and analysis plan as components of the remedial design.

7.7.1 Field Sampling Plan

The draft FSP (see footnote e) was submitted for Agency review and comment on July 11, 2002. This plan described in detail how and where samples will be collected to characterize waste zone material and underburden soils in support of the project. The draft FSP fulfills half of the GDE-72 recommendation for a sampling and analysis plan. The rest of this recommendation is met by the Environmental Restoration QAPjP discussed in the next section.

The draft FSP document is currently being revised to incorporate responses to Agency comments and to reflect the new baseline for storing the packaged waste zone materials onsite rather than at the AMWTP facility. The comment resolution sheets are being provided in place of the revised document that is planned for submittal to the Agencies in October 2002 as a part of the supplemental remedial design submittal. The comment resolution sheets can be found in Volume II, behind Tab 7.7.1.

7.7.2 Environmental Restoration Quality Assurance Project Plan

The *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Inactive Sites* (DOE-ID 2000) (provided in Volume II, behind Tab 7.7.2) satisfies a required remedial design element in accordance with the FFA/CO. This QAPjP (DOE-ID 2000) discusses quality assurance and quality control requirements and is applicable to this project. In addition, the QAPjP references the standard analytical laboratory methods used for sample analysis as well as applicable sample holding times, sample sizes, and preservation requirements. It meets the requirements of a Category III quality assurance program plan as defined by the EPA and was prepared to meet the requirements and guidance contained in *EPA Requirements for Quality Assurance Project Plans* (EPA 2001) and *EPA Guidance for Quality Assurance Project Plans* (EPA 1998).

7.8 Waste Material Processes

As discussed in the following subsections, six documents are being submitted (i.e., five new and one already submitted) that relate to waste material processes as additional required studies. The project has determined these documents to be of particular interest to the Agencies based on past discussions and comment resolutions. As described below, some of these documents also satisfy required remedial design elements.

7.8.1 Excavation Plan and Sequential Process Narrative

The draft Excavation Plan and Sequential Process Narrative (see footnote f) was submitted for Agency review and comment on July 11, 2002. The document describes the sequence of excavation, as well as the rationale behind the selected sequence. The sequential process narrative portion of the document provides a textual description supplemented with logic diagrams that detail handling operations including waste zone material excavation, processing, sampling, and packaging. Because the process flow diagrams also are included in the document, its inclusion in this submittal satisfies a required remedial design element (i.e., process flow diagrams) in accordance with the RD/RA SOW (LMITCO 1997) and a recommended element in accordance with GDE-72.

The draft Excavation Plan and Sequential Process Narrative is currently being revised to incorporate responses to Agency comments and to reflect the a new baseline for storing the packaged waste zone materials onsite rather than at the AMWTP facility. The comment resolution sheets are being provided in lieu of the revised document, which is planned to be submitted to the Agencies in

October 2002 as a part of the supplemental remedial design submittal. The comment resolution sheets can be found in Volume II, behind Tab 7.8.1.

7.8.2 Waste Categorization Matrix

The *Waste Categorization Matrix for the OU 7-10 Glovebox Excavator Method Project* (Jamison 2002) is provided in Volume II, behind Tab 7.8.2. This EDF indexes the waste zone materials and conditions relative to the project design basis, safety analyses, normal operating procedures, abnormal or contingency operating procedures, and exclusion from the project performance baseline. This EDF contains a summary table that categorizes the materials into inventory categories of (1) expected, (2) possible, or (3) not included in the OU 7-10 inventory. The rationale used in categorizing materials also is provided in the document.

7.8.3 Fissile Material Inventory

The *Estimated OU 7-10 Target Area Fissile Material Inventories Based on the Analysis of SWEPP Radioassay Data* (Blackwood et al. 2002) is provided in Volume II, behind Tab 7.8.3. This EDF evaluates the fissile material drum inventories expected to be present in the project 40 × 40-ft target area for waste types not expected to be measured by the FMM system; thus providing the FGE estimate for unmeasured portions of packaged waste zone material.

The analysis focuses on the fissile material on a per drum basis and uses that information to estimate the probability of a single drum of waste containing greater than 200 FGE of fissile material. Because of the limited amount of fissile material data available for the actual waste in the OU 7-10 target area, the analysis is based on an assessment of similar waste processed at the Stored Waste Examination Pilot Plant (SWEPP) radioassay facility. The SWEPP data consist of measurement results from drums assayed by the SWEPP passive-active neutron (PAN) system from 1993 through January 2002. All assay files were reprocessed using the most recent bias adjustment parameters and the data from 3,824 drums were evaluated.

7.8.4 Fissile Material Disposition

The *Disposition of Fissile-Monitored Material for the OU 7-10 Glovebox Excavator Method Project* (Borland 2002) is provided in Volume II, behind Tab 7.8.4. This EDF provides a basis for operational decisions and procedures involving the disposition of waste zone materials suspected of containing concentrations of fissile material and for the subsequent packaging of these materials after FMM.

7.8.5 OU 7-10 Glovebox Excavator Method Project Process Model

The *OU 7-10 Glovebox Excavator Method Process Model* (Anderson 2002) is provided in Volume II, behind Tab 7.8.5. This EDF, with the *Process Calculations for the OU 7-10 Glovebox Excavator Method Project* (Walsh and Anderson 2002) document discussed in the next section, satisfies the RD/RA SOW (LMITCO 1997) requirement for a "process volume, flow rates, and quantities" remedial design element as well as the associated GDE-72 recommendation. This EDF describes the development, implementation, and results of a dynamic, visually interactive, discrete-event, computer model used to simulate the operations of the glovebox excavator method. The model was developed in Extend 5 (i.e., an industrial process modeling software package). The model is based on the process logic diagrams developed by a multidisciplinary team comprising design engineers, systems engineers,

specialty engineers, and operations experts. In addition, this team provided the task durations used by the model.

7.8.6 Process Calculations

The Process Calculations document (Walsh and Anderson 2002) contains the process calculations (i.e., volumes and processing rates) for the project and is provided in Volume II, behind Tab 7.8.6. This EDF, with the Process Model EDF (Anderson 2002) discussed in the previous section, satisfies the RD/RA SOW (LMITCO 1997) remedial design element requirement for a "process volume, flow rates, and quantities" as well as an associated GDE-72 recommendation.

8. SCHEDULE

A project summary schedule has been developed with consideration given to fiscal year (FY) funding limitations, weather, and the construction season in which the work is planned to be performed (i.e., time of year). Project milestones included in the schedule reflect the agreements contained in Agreement to Resolve Disputes (DOE 2000). Although the schedule includes Stage III milestones, detailed planning of projected Stage III activities has not been performed at this time. The project summary schedule is provided in Volume II, behind Tab 8.

Remedial Design Crosswalk

The schedule referenced in Section 8 satisfies the required remedial design element for a schedule (GDE-72).

9. COST ESTIMATE

Remedial Design Crosswalk

The cost estimate referenced in Section 9 satisfies the required remedial design element for a cost estimate (FFA/CO, 1997 RD/RA SOW, GDE-72).

The OU 7-10 Glovebox Excavator Method Project provided a summary of the estimated total project cost in Table 4-1 of the CDR (INEEL 2002b). This estimated cost was based on completion of the conceptual design, which occurred in January 2002. That estimate resulted in a baseline range of $77.5 to $81.9 million. In early September 2002, the project performed an estimate update following completion of site development construction, detailed engineering, acquisition of most major equipment and hardware, and detailed work planning for FY 2003. Vendor and subcontractor quotes or actual purchase values were used where available. Costs for environmental, safety, health, and quality assurance, design engineering, procurement, construction management, and administration are based on known costs to date plus estimated to-go staffing requirements. Escalation factors were applied to the estimate components to address the effects of inflation on projected costs over time. Contingency was included to cover cost and schedule risk.

The results of the estimate update are consistent with and slightly less than the estimated total project cost provided in the CDR. The most significant area of cost reduction is in operations, where more detailed planning has taken place since submittal of the CDR. Therefore, the project continues to expect completion within the conceptual design baseline range as submitted in January 2002. However, the estimate update is not complete because of late-breaking events that have not yet been taken into account; namely, the decision to store project waste onsite. For this reason, the estimate update will not be submitted as part of the remedial design. In addition, it should be noted that the project has no plans to submit a cost estimate for Stage III because planning of projected Stage III activities has not yet begun.

10. OPERATIONS AND MAINTENANCE PLAN

The "Phase I Operations and Maintenance Plan for the OU 7-10 Glovebox Excavator Method Project" (PLN-678) is being provided with this remedial design submittal to satisfy the requirements of the FFA/CO and GDE-72. It is located in Volume II, behind Tab 10. This initial O&M Plan delineates the operations and maintenance activities and procedures required to perform a retrieval demonstration of the selected area of OU 7-10. It also defines the administrative and technical programs necessary to support the project and ensure worker and environmental safety.

Remedial Design Crosswalk

The O&M Plan (PLN-678) satisfies the required remedial design element for an O&M plan (FFA/CO, GDE-72).

11. PREFINAL INSPECTION CHECKLIST

In accordance with the FFA/CO (DOE-ID 1991), Agency project managers will conduct a prefinal inspection of the OU 7-10 Glovebox Excavator Method Project. The inspection will be conducted concurrent with the DOE-ID operational readiness review and before the DOE authorization to proceed. A prefinal inspection checklist is used during the inspection to ensure that a complete inspection is performed and that results are documented for each area inspected. The scope of the checklist encompasses design, construction, and operational elements necessary for Agency acceptance of project construction activities and for declaring the facility ready to operate. As such, the checklist includes regulatory-type issues, specific project systems, components, activities, startup procedures, and other areas that the Agency project managers will want to verify have been addressed and are complete before the facility begins operation.

A draft proposed Prefinal Inspection Checklist is provided with this remedial design submittal (i.e., Volume II, behind Tab 11) to initiate a dialogue with the Agencies as to the content of the prefinal inspection checklist. This draft checklist also includes the project plan for the prefinal and final inspection process. The remedial design comment resolution process and, if necessary, discussions in the weekly teleconferences comprise the planned mechanism for finalizing this checklist. When finalized and approved, the checklist will (1) document the areas agreed on by all parties to be inspected that will constitute Agency acceptance of project construction activities and readiness for operation of the project and (2) include the agreed on acceptance criteria for each checklist item.

The project plan for the prefinal and final inspection process includes performing the final inspection after transfer of the facility to the INEEL Inactive Sites organization for D&D&D during overburden replacement on the excavation area. Therefore, an intermediate inspection is planned for the Agency review, which is needed at completion of excavation activities, to obtain concurrence that associated objectives have been met. This approach allows the Remedial Action Report and O&M Report to be combined into a single primary deliverable as was discussed previously for the Staged Interim Action Project – Stage II effort. The combined reports fit more closely to the nature of this project (i.e., short duration of the project performance period) and will allow more time for data summary and subsequent production of the primary deliverable.

12. DOCUMENT INDEXES

Volume II includes two indexes to assist readers in locating documents. The first index is sorted alphanumerically by document type (e.g., drawings, engineering design files, and specifications). The second index is sorted alphanumerically by document title. Because a large number of the document titles begin with "OU 7-10 Glovebox Excavator Method Project ..." which causes difficulty in locating a specific document, the repetitious part of the title has been set off by parentheses (for applicable documents only) and moved to the end of the unique part of the title.

References in the indexes will direct the reader to a volume and a tab number (i.e., for documents included in this remedial design submittal) or will identify the applicable partial submittal (i.e., CD-3a, -3b, or -2/3; or the FSP, DQO, Excavation Plan and Sequential Process Narrative draft-document submittal]) when the document was sent.

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1. Table of Contents

TABLE OF CONTENTS

Tab Number

RD Narrative

Table of Contents 1

CD-1 Submittal 2
- DOE Authorization for CD-1 ..... 2.1
- CD-1 Comment Resolution 2.2
- CD-1 Comment Resolution Discrepancies 2.3

CD-3a Submittal 3
- DOE Authorization for CD-3a 3.1
- CD-3a Table of Documents 3.2
- CD-3a Comment Resolution 3.3
- CD-3a Revised Documents 3.4

CD-3b Submittal 4
- DOE Authorization for CD-3b 4.1
- CD-3b Table of Documents 4.2
- CD-3b Comment Resolution 4.3

CD-2/3 Submittal 5
- DOE Authorization for CD-2/3 ..... 5.1
- CD-2/3 Table of Documents 5.2
- CD-2/3 Comment Resolution 5.3
- CD-2/3 Revised Documents 5.4

Other RD Elements 6
- Glovebox Excavator Method T&FRs 6.1
- System Design Criteria 6.2
  - Packaging 6.2.1
  - Excavation 6.2.2
  - General Structures & Site Development 6.2.3
  - Instrumentation & Control 6.2.4
  - Facility & Infrastructure 6.2.5
  - Fire Protection 6.2.6
  - Process 6.2.7
- Major Equipment Identification 6.3
- Waste Management Plan 6.4
- Facility Shutdown Plan & D&D&D Pre-Plan 6.5
- Operations Health & Safety Plan 6.6

Tab Number

Additional Required Studies 7
- Air Emissions 7.1
  - Air Emissions Evaluation 7.1.1
  - NESHAPs Monitoring Plan 7.1.2
- ARARs Matrix 7.2
- Chemical Compatibility 7.3
- Data Quality Objectives 7.4
- Fissile Material Monitoring (FMM) 7.5
  - FMM Hardware Summary 7.5.1
  - FMM System Description 7.5.2
- RA Report Outline 7.6
- Sampling & Analysis 7.7
  - Field Sampling Plan 7.7.1
  - ER QAPjP 7.7.2
- Waste Material Processes 7.8
  - Excavation Plan & Sequence Process Narrative 7.8.1
  - Waste Categorization Matrix 7.8.2
  - Fissile Material Inventory 7.8.3
  - Fissile Material Disposition 7.8.4
  - Process Model 7.8.5
  - Process Calculations 7.8.6

Project Schedule 8

Cost Estimate 9

O&M Plan 10

Pre-Final Inspection Checklist 11

Indexes 12
- By Document Type 12.1
- By Document Title 12.2

2. CD-1 Submittal

Sections 2.1 through 2.3 provide information and documents related to the Conceptual Design Report (CD-1) submittal. Documents provided herein include:

- DOE letter authorizing the project to proceed past Critical Decision-1
- Information copy of the comment resolution sheets from the Agency review of the Conceptual Design Report (CDR).
- A review identifying an updated status for the responses to Agency comments on the CDR, subsequent to the completion of Title design.

2.1 DOE Authorization for CD-1

RECEIVED
FEB 14 2002
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CN 30228

United States Government

Department of Energy

memorandum

Idaho Operations Office

cc - T. Schultz
L. Snarr
3535
D. Wilkins

Date: February 12, 2002

Subject: Approve Critical Decision (CD-1), Preliminary Baseline Range and Start Preliminary Design of the OU 7-10 Glovebox Excavator Method (GEM) Project at the Radioactive Waste Management Complex (RWMC) at the Idaho National Engineering and Environmental Laboratory (INEEL) (EM-INTEC-02-009)

To: Mark W. Frei, Acting Manager

Through: Jerry Lyle, Assistant Manager, Environmental Management
Kathleen Hain, Director, Environmental Restoration Program

From: Peter J. Dirkmaat
Project Manager, OU 7-10 GEM Project

Issue:

The Preliminary Baseline Range for the GEM Project (Total Project Cost estimate $77.5M) is ready for approval. The critical decision for this project requires review by the Office of Environmental Management (EM) Equivalent Energy Systems Acquisition Advisory Board (ESAAB) and approval by the EM Acquisition Executive (EM-1). EM-1 has delegated Acquisition Executive authority for this project to the Manager of the Idaho Operations Office, per DOE Order 413.3.

CD-0 for this project was approved in October, 2001. The INEEL has completed the Conceptual Design and the preliminary Project Execution Plan (PEP), which includes the cost, schedule, and technical baseline ranges. The Acquisition Plan was submitted to DOE-HQ for approval. An assessment of the project completed by the INEEL in January, 2002, using the EM Project Definition Rating Index (PDRI) resulted in a score of 602, versus an acceptable target score of 542 for the conceptual phase.

Background: The OU 7-10 GEM Project will demonstrate safe retrieval of transuranic waste from a specified and preselected area of OU 7-10 (Pit 9) in the Subsurface Disposal Area (SDA) at the RWMC at the INEEL.

The retrieval system of the OU 7-10 GEM Project consists of a fabric weather enclosure structure (WES), steel confinement structure, excavator, ventilation system, and other support equipment. The project calls for overburden to be removed to a specified depth, after which the excavator arm, which is contained within a confinement structure, will be used to excavate a semicircular swath of waste zone material. The retrieved material in the excavator bucket will be placed in a transfer cart. One transfer cart will be located at the entrance to each of three material sorting and packaging gloveboxes. The carts will transport waste zone materials inside the gloveboxes to the location where the material will be

inspected, categorized, and sampled. Each of the three gloveboxes will be equipped with three drum bagout stations for packaging the material into 55- and 85-gallon drums.

After waste excavation is complete, a sampling device attached to the excavator arm will be used to take core samples of the underburden. The overburden will be placed back into the excavation and a low-strength grout mixture will be pumped into the excavation. Deactivation, decontamination, and decommissioning activities will follow completion of excavation backfill activities.

A Preliminary Documented Safety Analysis Report has been prepared and is now under DOE review. Based upon safety-related information developed during the conceptual design phase, adequate provisions for employee, environmental, and the public safety are incorporated into the design.

General phases of the project include engineering and design, procurement, construction, testing, operations, and closure. This project as proposed reduces the previous Pit-9, Stage II project costs by approximately $40M and project execution time by five years.

Minutes of the ESAAB meeting, held January 22, 2002 are attached to this memorandum. Section 4 of the Minutes enumerated action items stemming from the Board meeting.

Sensitivity: Remediation of the RWMC Waste Area Grouping 7 is dictated by a 1991 Federal Facilities Compliance Agreement/Consent Order, a Record of Decision issued in 1993, and a negotiated Statement of Work. Agreement among DOE-ID, USEPA, and the State of Idaho resulted in several proposed enforceable milestones, with associated fines and penalties. One of those milestones is approval of CD-1 by February 28, 2002. To proceed on the proposed schedule milestones, the project will in the future request partial CD-3 approval for long lead and weather enclosure items.

Policy Impact: None

Recommendation: Approve Critical Decision (CD-1) to proceed with preliminary design activities and the action items in Section 4 of the attachment.

Approve: Mark W. Frei Date: 2/13/02

Disapprove: _____ Date: _____

Attachment

2.2 CD-1 Comment Resolution

9/10GEM-12-0003

Idaho National Engineering and Environmental Laboratory

March 18, 2002

CCN 30780

Mr. Peter J. Dirkmaat
Environmental Restoration
U.S. Department of Energy
Idaho Operations Office
850 Energy Drive, Mailstop 1154
Idaho Falls, ID 83401-1563

Ms. Kathleen E. Hain
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CONTRACT NO. DE-AC07-99ID13727 - OPERABLE UNIT 7-10 GLOVEBOX EXCAVATOR METHOD PROJECT RESPONSES TO THE U. S. ENVIRONMENTAL PROTECTION AGENCY AND IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY COMMENTS ON THE CONCEPTUAL DESIGN REPORT

References:
(a) W. Pierre letter to P. Dirkmaat, Comments on the Draft 10% Remedial Design and Remedial Action Work Plan for the Stage II Pit 9 Glovebox Excavator Method, Operable Unit 7-10, dated January 23, 2002
(b) D. Nygard letter to P. Dirkmaat, Pit 9 Conceptual Design Comments, dated January 23, 2002
(c) M. Frei letter to S. Allred and J. Iani, Extension of the Dispute Resolution for Pit 9 Retrieval Demonstration Until November 30, 2001, EM-ER-01-180, dated October 30, 2001

Dear Mr. Dirkmaat and Ms. Hain:

Enclosed are the responses to the U. S. Environmental Protection Agency (EPA) and Idaho Department of Environmental Quality comments that were transmitted via References A and B.

We note that several EPA comments make reference to a Remedial Design/Remedial Action Work Plan submittal. This was a primary deliverable under the 1997 Scope of Work. However, consistent with the agreed project schedule and Reference C, submittal of a Remedial Action Work Plan to the regulators is not planned. The document deliverable list provided as Appendix C in the Project Execution Plan will be updated to reflect this plan of action, as well as additional details regarding the individual documents that will be prepared to support project completion.

22-0251417 LMIT

If you have any questions or comments, please contact Mike Pratt at 526-5565, or me at 526-3029.

Sincerely,

John M. Schaffer
Acting Manager of Projects, WAG 7
Environmental Restoration

MBP:tld

Enclosures

cc: C. D. Cutler, MS 3810
R. J. Hoyles, DOE-ID, MS 1221
K. C. O'Neill, (w/Encl) DOE-ID, MS 1222

22-0251418 LMIT

bcc: (w/o Encl)
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Steven A. Davies, MS 3920
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OU 7-10 File (w/Encl)
John M. Schaffer File
D. K. Jorgensen Letter File (DKJ-52-02)

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OU 7-10 GLOVEBOX EXCAVATOR PROJECT -
RESPONSES TO AGENCY COMMENTS ON DRAFT CDR

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
EPA	1/23/02 Pierre to Dirkmaat LTR	1	GENERAL	1. " In order to provide a full review of these structures it is imperative that the final structural calculations and documentation be provided prior to construction reviewed for the WES, PGS and the RGS. (GG) Suggestion: If it is desired to start construction prior to submittal of the 90% RD, that portion of the RD/RAWP can be submitted separately	The RD Report will be submitted to the Agencies in accordance with the project schedule and not later than 10/31/02. Agency review of final structural calculations and documentation prior to construction was not part of the agreement. This step would increase the schedule significantly. This comment, and a number of others, refers to an RD/RAWP. The agreement only calls for the submittal of an RD (Remedial Design) Report to the regulators. Submittal of an RAWP (Remedial Action Work Plan) will be cause for significant schedule delay. This response applies to other comments in which reference is made to an RAWP.
EPA	1/23/02 Pierre to Dirkmaat LTR	2	GENERAL	2. The FFS design calculations and documentation should be provided prior to construction, for review. The floor system is a critical item that must work properly for the project to complete the intended task. (GG) Suggestion: If it is desired to start construction prior to submittal of the 90% RD, that portion of the RD/RAWP can be submitted separately	The RD Report will be submitted to the Agencies in accordance with the project schedule and not later than 10/31/02. Agency review of final structural calculations and documentation prior to construction was not part of the agreement. This step would increase the schedule significantly.
EPA	1/23/02 Pierre to Dirkmaat LTR	3	GENERAL	3. The DD&D section is very general and does not address how the structure will be dismantled. This should be covered in the 90% RD/RAWP.	Since the DD&D of the Glovebox Excavator Method Project facilities will not be bid as part of the construction effort, this information will not be included with the Title Design documents. The project is in the process of planning for the DD&D of the facilities, which will occur subsequent to the completion of operations and excavation closure activities. This information will be included in a DD&D Plan, which will be prepared prior to completion of operations.
EPA	1/23/02 Pierre to Dirkmaat LTR	4	GENERAL	4. A Sampling and Analysis Plan will be required for the 90% RD/RAWP. Suggestion: Information, including how the type and number of samples will be determined, along with specific assumptions, DQO's, and statistical calculations necessary to determine the type and number of samples to collect to meet overall project DQO's, will be required.	A Sampling and Analysis Plan will be included as part of the RD Submittal.
EPA	1/23/02 Pierre to Dirkmaat LTR	5	CDR, pg 3-3, § 3.1	5. This document indicates that project functions will take place 24 hours a day with four shifts of workers working 12 hours shifts, 4 days on and 4 days off. A 12 hr shift may lead to fatigue and error. Suggestion: There should be a discussion of whether the potential for human errors are increased with a 12 hr schedule and whether there is related operational history, e.g., at INTEC which serves as a basis for this schedule.	The operations planning documentation will address shift staffing, rotations, and scheduling. INEEL operations experience and lessons learned will be included in the overall operations plan.

22-0251420 LMIT

OU 7-10 GLOVEBOX EXCAVATOR PROJECT -
RESPONSES TO AGENCY COMMENTS ON DRAFT CDR

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
EPA	1/23/02 Pierre to Dirkmaat LTR	6	CDR, pg 2-3, § 2.3	6. General objectives Suggestion: There are significant differences in characterization information provided by the original Stage II compared to the Glovebox Excavator Method Project. Since sampling and analysis for safe and compliant storage involves about 500 samples, one should evaluate sampling and analytical choices that would develop some waste zone characterization consistent with the original Stage II objectives. For example, the interstitial soil component of the waste zone represents a major single component fraction. The Glovebox Excavator Method provides an opportunity to derive important characterization information relative to this component (even recognizing the "mixing" inherent with the retrieval method). Evaluation of a retrieval strategy would require this information (especially plutonium and americium content). (JM)	The agreed upon plan is to conduct only t. minimum characterization required for acceptance into the Advanced Mixed Waste Treatment Facility (AMWTF). Evaluation of sampling and analytical choices to develop waste zone material characterization and the associated sampling and analytical work would add to the cost and time to complete the work.
EPA	1/23/02 Pierre to Dirkmaat LTR	7	CDR, pg 2-3, Fig 2-2	7. The third item in this table states the author(s) will include treatability study testing, and then in the adjacent column it states that treatability study testing has been deferred. Please explain how and when treatability studies will take place, as it is necessary at some point. (AP)	Treatability studies are not in the scope of the project.
EPA	1/23/02 Pierre to Dirkmaat LTR	8	CDR, pg 2-3, Fig 2-2	8. Last item. Does the proposed weather enclosure serve any mitigative function in case of failure of the primary confinement? (AP)	The Weather Enclosure Structure (WES) is identified in the Safety Analysis as serving mitigative function in case of failure of a prin. confinement.
EPA	1/23/02 Pierre to Dirkmaat LTR	9	CDR, pg 2-4, Fig 2-3	9. This Figure states, "The multi disciplinary team used a tailored EPA process to develop the DQOs." This tailored process has produced very general DQOs in Appendix B, which do not indicate to the reader how an 80% confidence interval was chosen or what the consequences are of having decision errors. (AP)	Specific criteria are dependent on the Advance Mixed Waste Treatment Facility (AMWTF) waste acceptance criteria (WAC), which are being prepared. Further details will be developed during Title Design.
EPA	1/23/02 Pierre to Dirkmaat LTR	10	CDR, pg 3-4, § 3.1, Tbl 3.1	10. Sampling requirements for overburden indicate "none required". Although a sampling plan is not required; RadCon coverage of the operation should include field surveys during the removal process. These data represent a form of sampling and process control, and should be recognized. (JM)	Field surveys of packaged material are performed for safe handling. These surveys are in-process measurements and are not planned to be addressed in the DQO's or Field Sampling Plan.
EPA	1/23/02 Pierre to Dirkmaat LTR	11	CDR, pg 3-5, § 3.1.1	11. The 90% RD/RAWP will need to provide the method that shows how the excavated soils will be placed in the soil bag. (GG) Suggestion: This could entail a frame to support the soil bag. The frame would be helpful because it would minimize the loss of soil during the loading the bags	The current design concept is that the soil sacks will be supported in a box or a frame for loading. Additional details will be developed during Title Design.
EPA	1/23/02 Pierre to Dirkmaat LTR	12	CDR, pg 3-5, § 3.1.1	12. The 90% RD/RAWP needs to include specifications on the soil bag, including the weight limit to the bags so they are not overloaded and break unnecessarily. (GG)	The soil bags will be specified in the Title Design.

22-0251421 LMIT

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
EPA	1/23/02 Pierre to Dirkmaat LTR	13	CDR, pg 3-5, § 3.1.1	13. The statement "contamination that exceeds operating limits is encountered" needs some explanation. Are airborne radioactivity CAM alarms the only control? Or are field surveys results by RadCon personnel also used for contamination control limits? Figure pg 3-3 should indicate in the "Remove" box that radcon surveys/monitoring is involved. (JM)	Further details will be provided in the process descriptions provided in the RD Submittal.
EPA	1/23/02 Pierre to Dirkmaat LTR	14	CDR, pg 3-10, § 3.1.3, 2nd Para	14. ** This section states, "To meet waste zone material sampling objectives, random composite samples of non-debris, waste zone material (soil and sludge) are collected from the transfer cart in the glovebox." It is unclear whether this random composites will be obtained intra or inter transfer cart. Composite sampling of discrete waste or soil types appears inappropriate. Suggestion: Need to clarify what the Principle Study Questions are before determining the appropriate sampling approach.	Interstitial soil and waste will be removed together as waste zone material. The sampling of the waste zone material in the glovebox supports safe storage and material disposition. Because the Advanced Mixed Waste Treatment Facility (AMWTF) Waste Acceptance Criteria (WAC) is still being negotiated, the Principle Study Questions and solutions are subject to change. This information will be presented in the RD Submittal. The sampling method will be explained in the Field Sampling Plan.
EPA	1/23/02 Pierre to Dirkmaat LTR	15	CDR, pg 3-10, § 3.1.3, 2nd Para	15. ** The section also states, "The project team determines the number of samples to statistically characterize the waste stream as a single population with a confidence interval of 80% consistent with guidance from SW-846." The assumptions being used to support these statistics, what statistical equations will be used, and what information will be used from previous characterization efforts need to be detailed in the 90% RD/RAWP. Suggestion: The appropriate statistics to use is waste stream dependent unless the only comparison being made is against background.	Interstitial soil and waste will be removed together as waste zone material. The sampling of the waste zone material in the glovebox supports safe storage and material disposition. Because the Advanced Mixed Waste Treatment Facility (AMWTF) Waste Acceptance Criteria (WAC) is still being negotiated, the Principle Study Questions and solutions are subject to change. This information will be presented in the RD Submittal. The statistical approach will be explained in the Field Sampling Plan.
EPA	1/23/02 Pierre to Dirkmaat LTR	16	CDR, pg 3-10, § 3.1.3	16. Additionally, this section states that eight core samples of underburden will be collected to obtain migration information about COC. What statistical process will be used to determine sample locations needs to be described in the 90% RD/RAWP. Suggestion: It is also important to identify whether the cores will be driven to refusal or whether only the top 12" to 24" of underburden will be sampled.	The sampling method will be presented in the Field Sampling Plan.
EPA	1/23/02 Pierre to Dirkmaat LTR	17	CDR, pg 3-10, § 3.1.3	17. The waste zone material sampling description is obviously oversimplified at the 10% RD/RAWP. A Sampling and Analysis Plan in the 90% RD/RAWP will be necessary to define in specific detail the sampling methods and statistical procedures necessary to meet DQOs. The plan must clearly define the sampling methods and statistical procedures to accomplish a defined accuracy at a stated confidence level (considering the waste "granularity"). (JM)	A Sampling and Analysis Plan will be included in the RD Submittal. This plan will explain the sampling methods and statistical procedures to accomplish a defined accuracy at a stated confidence level.

22-0251422 LMIT

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
EPA	1/23/02 Pierre to Dirkmaat LTR	18	CDR, pg 3-10, § 3.1.3, 1st Para	18. The last sentence in this paragraph states that "Overburden is not sampled, as the material is returned to the pit following excavation of the waste zone material." Why is the overburden being automatically returned to the pit, when it may have been contaminated, without sampling this is unknown. (AP)	The issue of the overburden has been dis in phone conversations with the Agencies (Nov. 2001), wherein it was agreed that the overburden is presumed non-contaminated to a depth of 3.5 feet, and suitable for return to pit.
EPA	1/23/02 Pierre to Dirkmaat LTR	19	CDR, pg 3-11, § 3.1.3	19. Suggestion: Table pg 3-2 lists different types of analyses for the different classes of materials. All samples should be analyzed by NDA gamma spectroscopy for TRU nuclides and other potential contaminants prior to the specified chemical analyses. The method is fast and inexpensive, and provides useful information on a principal contaminant of the waste zone. Most laboratories performing mixed waste analyses for chemical constituents require knowledge of the radioactivity content of the sample (or they analyze it prior to chemical processing). (JM)	All waste drums will be assayed to characterize radioactive and TRU constituents per the Advanced Mixed Waste Treatment Facility (AMWTF) waste acceptance criteria (WAC). The project will estimate sample activity for shipping to the on-site laboratory. The laboratory may scan for Facility Inventory Limits.
EPA	1/23/02 Pierre to Dirkmaat LTR	20	CDR, pg 3-11, Tbl pg 3-2	20. "* The title of this table states, "Waste zone material and underburden samples undergo different analyses for different purposes." It is our position that the waste zone is not homogeneous. Also, the interstitial soil is influenced by individual releases from waste containers and is also not homogeneous. Justification will be required for the sampling strategy and analyses in the 90% RD/RAWP.	The retrieved waste and interstitial soil are considered a single waste (waste zone material). Sampling is performed to characterize this waste for safe storage and acceptance into the AMWTF.
EPA	1/23/02 Pierre to Dirkmaat LTR	21	CDR, pg 3-11, § 3.1.3, 4th Para	21. This section indicates what laboratories may be used for sample analyses. Please indicate if PE samples will be sent to these laboratories prior to analysis and the QA/QC criteria the laboratories will be held to. (AP)	Performance evaluation (PE) samples, if necessary, will be addressed in the Sampling and Analysis Plan as part of the RD Submittal.
EPA	1/23/02 Pierre to Dirkmaat LTR	22	CDR, pg 3-12, § 3.1.4	22. This section briefly describes the duties of glovebox operators relative to waste characterization. Will the glovebox operators have available RadCon instrumentation to survey the waste received into the glovebox (other than the fissile/TRU material well monitor)? Appropriate survey instrumentation can provide useful characterization data and quickly resolve issues relative to suspect material. (JM)	Each cart load that comes into the glovebox will be surveyed by a radcon technician located outside the confinement.
EPA	1/23/02 Pierre to Dirkmaat LTR	23	CDR, pg 3-12, § 3.1.4	23. This section states, "The glovebox excavator project must maintain data records of each waste zone material drum, and a simple data management strategy supports this requirement." Waste zones will need to be defined in the 90% RD/RAWP.	The sentence simply refers to drums from the waste zone; i.e., the zone between the overburden and underburden. There are no other plans to zone the material.
EPA	1/23/02 Pierre to Dirkmaat LTR	24	CDR, pg 3-12, § 3.1.4	24. Suggestion: This section also states that only paper forms will be used for data management. Procedures may be needed to protect these forms from contamination during process operations? (AP)	All forms will be processed in noncontaminated areas. Rad Con may determine in procedures that a survey of hard copy data is necessary before leaving the WES.
EPA	1/23/02 Pierre to Dirkmaat LTR	25	CDR, pg 3-12, § 3.1.4, 7th Para	25. This section states that mercury and volatile organic compounds will not be included in air pollutant monitoring. An EDF or equivalent will be needed to support this conclusion.	A revision to the project Air Emissions Evaluation EDF will be generated as part of the project effort. The EDF will provide a basis for the assumption that VOC and Hg monitoring would not be performed.

22-0251423 LMIT

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
EPA	1/23/02 Pierre to Dirkmaat LTR	26	CDR, pg 3-12, § 3.1.4, 7th Para	26. This section also states that if the HEPA filters fail, an alarm will sound. Procedures to prevent releases of contamination if the HEPA filters fail should be addressed in the 90% RD/RAWP	The HEPA filters will be monitored for failure and the stack emissions will also be monitored for contamination. An alarm for either upset condition will notify personnel for initiation of emergency procedures that are to be developed.
EPA	1/23/02 Pierre to Dirkmaat LTR	27	CDR, pg 3-14, Fig 3-7	27. This figure is an operations process model screenshot. Unfortunately, this figure is not clearly explained and should be addressed in the 90% RD/RAWP	The figure was included in the report to help communicate what a discrete event model looks like. The models will be updated as the process definition further develops in Title Design. Further explanation of the model, its inventory and time inputs and results will be developed during Title Design.
EPA	1/23/02 Pierre to Dirkmaat LTR	28	CDR, pg 3-13, § 3.1.4	28. Figure 3-6 indicates the assay trailer provides TRU content and radionuclide content. What are the requirements for radionuclide content? The DQOs state TBD. Although we would think that we should have some idea at this point as to the requirements for safe storage and acceptance at AMWTF, all waste zone samples should receive an NDA by gamma ray spectroscopy. This would be independent of the assay and provide additional information at higher sensitivity. (JM)	The requirements of the drum assay will be determined in Title Design. AMWTF may assay the drums for OU 7-10 thus eliminating need of a dedicated assay trailer and the establishment of assay requirements since they would come from AMWTF. OU 7-10 is currently developing the sampling process. The process will be finalized in Title Design. Also, see response to comment #19.
EPA	1/23/02 Pierre to Dirkmaat LTR	29	CDR, pg 3-14, Fig 3.7	29. This provides the operations process model screenshot. The process illustrated indicates that the packaged overburden is assayed, and the drum count in the figure suggests that some overburden is stored in drums? Please clarify. (JM)	Overburden is not assayed and is stored in soil sacks. The model at the CDR level utilizes a 55-gal drum as the discrete unit volume for time estimating. As the model matures during Title Design, these details will be clarified. Per comment 27, further explanation of the model will be provided in the RD Submittal.
EPA	1/23/02 Pierre to Dirkmaat LTR	30	CDR, pg 3-15, § 3.1.6	30. Do the surfaces that are to be painted need to be prepared? (Paint does not stick very well to dusty and dirty surfaces). (GG)	Specifics regarding painted surfaces will be addressed in Title Design.
EPA	1/23/02 Pierre to Dirkmaat LTR	31	CDR, pg 3-15, § 3.1.6	31. Will the grout that is to be pumped into the pit be mixed on site or will it be delivered to the site in a "ready-mix" truck? Is there a need for a grout pump truck for grout placement? How would the arm of the pump truck be handled if it became contaminated during the grouting process? (GG)	Details regarding grouting will be developed during Title Design.
EPA	1/23/02 Pierre to Dirkmaat LTR	32	CDR, pg 3-21, § 3.2.3	32. The heating requirements/freeze protection for Fire Riser Building. The report mentioned insulation of the building, but a source of heat is not addressed? (DR)	The Fire Water Riser House will be heated by a small electric heater. The source of power will be WMF-657 which is located North of the proposed Fire Water Riser House location.
EPA	1/23/02 Pierre to Dirkmaat LTR	33	CDR, pg 3-21, § 3.2.3	33. How will the gravel be compacted in the area of the probes? Please discuss the measures of compaction that will be required (for example, 95% of the modified proctor) for the compaction of the gravel? Please specify the gradation of the gravel to be placed under the WES support structure? (GG)	Specific details regarding gravel compaction, measures of compaction, and gradation will be provided in Title Design. The project approach envisioned at present is as follows: The compaction will be 90% of maximum dry density around the probes in accordance with AASHTO T99. The gravel will be pit run from the Borax Pit which has 95-100% pass the 2-in sieve and 43% pass the #4 sieve and 5-8% pass the #200 sieve. The material compacts very well with proper moisture.

22-0251424 LMIT

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
EPA	1/23/02 Pierre to Dirkmaat LTR	34	CDR, pg 3-26, § 3.4.1	34. The 90% RD/RAWP should include all necessary backup information and/or calculations regarding the structural loading and weights of the equipment for the FFS to ensure proper structural design. The author(s) should specifically review concentrated loadings, including the impact loading, that may occur under the wheels of the forklift with a fully loaded drum or soil sack. Is the composite deck (3" metal deck + 3/16" plate) adequate to support the scale, exhaust stack and any other equipment. How will the composite deck be attached? (through puddle welds or screws?) Is the metal deck providing adequate support for the 5' span under the tension loading condition when the forklift passes over the span between the supports? What is the deflection of the metal composite deck? If the deflection under forklift loading is excessive, there may be a "waviness" in the floor when the fully loaded forklifts drive along. The International Building Code, IBC 2000, which is the industry standard for structural design loading and is cited in the DOE-ID AES,	Structural design will be developed during Design.
EPA	1/23/02 Pierre to Dirkmaat LTR	35	CDR, pg 3-26, § 3.4.1	35. Please address in the 90% design the potential of the Facility Floor Structure for uplift and overturning forces created by wind and seismic loads from the WES. (GG)	The Title Design of the FFS will include wind loads from the WES and seismic loads from the RCS. Seismic loads from the WES are likely to be small in comparison to the wind loads.
EPA	1/23/02 Pierre to Dirkmaat LTR	36	CDR, pg 3-28, § 3.4.4	36. Will the WES structure is designed for negative pressure (suction) in addition to the PC 2 wind loading. It is not clear in the documentation that this load combination has or will be addressed. Please include the fabric on the exterior of the structure in the 90% structural design of the WES (including the suction created within the WES). (GG)	Negative pressure if applicable will be included in the specification requirements for the WES
EPA	1/23/02 Pierre to Dirkmaat LTR	37	CDR, pg 3-28, § 3.4.4	37. Please indicate in the specification that the design for the WES will be approved (signed and sealed) by a licensed professional engineer in the State of Idaho. (GG)	This requirement is included in the draft Performance Specification that will be used to procure the WES.
EPA	1/23/02 Pierre to Dirkmaat LTR	38	CDR, pg 3-29, § 3.4.5	38. The design information for the ancillary structures is omitted from the submission and will need to be included in the 90% RD/RAWP. Also required will be ventilation, heating, air conditioning, plumbing and fire protection requirements for these buildings and code references for the design conditions. (DR)	Details regarding ancillary structures and associated utilities will be developed during Title Design.
EPA	1/23/02 Pierre to Dirkmaat LTR	39	CDR, pg 3-30, § 3.5.1	39. As the excavator will be an off-the-shelf backhoe, what safety limits on the hydraulic arm range of motion will be set to avoid breaching containment? Also, as the exhaust is discharged outside of the WES, will outside air be supplied to the engine, or will it draw from within the WES? If it draws from within the WES, this external discharge should be analyzed and balanced in the HVAC design. Also, carbon monoxide detectors may be warranted to ensure that the integrity of the exhaust discharge is maintained. (JM)	For three of the four end effectors, physical stops or lack of arm reach prevents the hydraulic arm from breaching the containment. The hydraulic hammer with a 5 ft tube sampler attached could breach the north and south wall. Care will be exercised when using this tool. The backhoe will use air from within the WES, however if any CAMS alarm the backhoe will be shut off immediately so no contamination will be drawn into it. CO detectors in the area of the backhoe will be considered. The excavator exhaust will be included in the air balancing for the Title De

22-0251425 LMIT

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
EPA	1/23/02 Pierre to Dirkmaat LTR	40	CDR, pg 3-35, § 3.5.1	40.The mitigation of fumes generated by the excavator is noted. Details for wall thimble, stack support and vibrational details for the connection to the excavator is required in the 90% RD/RAWP. Also a list of equipment operating within the WES that will produce fumes should be included. Further, please provide wall or roof thimbles with flexible fume exhaust reels or piping to eliminate these fumes, if present. (DR)	Excavator exhaust details will be developed during Title Design. No other combustion engine equipment will be located inside the WES.
EPA	1/23/02 Pierre to Dirkmaat LTR	41	CDR, pg 3-35, § 3.5.1	41. Excavator, forklifts, and other equipment may generate excessive quantities of heat and have (DR)	Heating and cooling loads will be developed during Title Design.
EPA	1/23/02 Pierre to Dirkmaat LTR	42	CDR, pg 3-38, § 3.5.3	42. The procedure for rotating the cart is unclear. Please explain how will the cart be rotated atop its mounting table if the drums are loaded with their major axis perpendicular to the gloveboxes. Will the bucket of the excavator be used for this purpose? Will the cart be equipped with a turning mechanism? Will the cart have a mechanism to prevent the cart from coming off the track? What procedures will be followed when the cart is accidentally bumped by the excavator or becomes stuck? (GG)	Cart rotation has been eliminated, per Agency agreement in the Feb. 28, 2002 weekly conference call. This will be reflected in Title Design.
EPA	1/23/02 Pierre to Dirkmaat LTR	43	CDR, pg 3-39, § 3.5.5	43. Recognizing that the concept consists of three identical gloveboxes and this concept provides certain advantages, how has this been balanced against using or tailoring certain glovebox lines for specialized operations, and/or receiving defined classes of wastes? (JM)	Early on in the project, specialized gloveboxes were discussed and ruled out as not being the most efficient way to process the waste. The design objective is to make the single design flexible enough to handle any of the waste types.
EPA	1/23/02 Pierre to Dirkmaat LTR	44	CDR, pg 3-42, § 3.5.5	44. Glovebox Hoist. Are the proposed Glovebox framing members designed to be able to withstand the load from the 1 ton hoist (including impact)? (GG)	Yes, the framing members are being designed to be able to withstand the load from the 1 ton hoist (including impact).
EPA	1/23/02 Pierre to Dirkmaat LTR	45	CDR, pg 3-43, § 3.5.5	45. ** Please provide additional design information for air relief for the RCS. The HEPA intake at each Glovebox will only address 5 percent of the design airflow. It is not evident from the text or the appendices that each intake into the RCS includes a HEPA filtration design. (DR)	All RCS air inlets are HEPA filtered as shown on the drawings (HV-1 and HV-2).

22-0251426 LMIT

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
EPA	1/23/02 Pierre to Dirkmaat LTR	46	CDR, pg 3-46, § 3.5.6	46. ** Waste sorting and inspection singles out, "visually unidentifiable combustible material" for special treatment. That is, it cannot go into a waste bag-out drum without fissile monitoring. Other noncombustible waste forms exist that can have significant fissile content, and historical data does not exclude their presence in Pit 9. Relying on a visual determination to select a class of material for fissile monitoring presents a risk to the operation and a risk of a drum overload. Using an appropriate RadCon survey instrument to hand survey the waste entering the process, or an installed in-situ monitor that "observes" the loaded cart can avoid this concern. These measurements would aid the operator to ensure that all suspect material goes to the fissile well monitor prior to drum loading. (JM)	The current plan is to categorize waste in groups: waste that does not need to be assayed prior to placement into a drum, and waste that does need to be assayed prior to placement into a drum. Based upon the historical inventory data associated with the expected waste matrices contained in the dig area and results from assaying of drums currently in storage, the soils and sludge material will not require assaying prior to loading into a drum. Other materials, such as HEPA filters, HEPA filter media, and non-identifiable combustible materials that are indistinguishable from HEPA filter media will be assayed prior to placement into a waste drum. Further development of engineering data to support conclusions as to which wastes need to be assayed prior to the placement of the waste material into a waste drum will be completed prior to the issuance of the Final Documented Safety Analysis (FDSA).
EPA	1/23/02 Pierre to Dirkmaat LTR	47	CDR, pg 3-48, § 3.5.6	47. Figure 3-35 depicts a worker handling waste material. Glove box operations that process and size metal scrap (and operations where glove penetration concerns exist) will need to address worker protection in operations (special glovebox gloves, leather over-gloves, special tooling, etc.). (JM)	Nevada Test Site (NTS) has had good performance from leather over-gloves in similar applications. The project will consider using leather over-gloves.
EPA	1/23/02 Pierre to Dirkmaat LTR	48	CDR, pg 3-49, § 3.6	48. Additional design information for balancing and controlling the airflow for each intake into the WES and RCS, will be required at the 90% RD. The report indicates a minimum of 12 air changes per hour in the Glovebox, with only 6-10 air changes per hour in the RCS minimum. (DR)	Air changes listed in the CDR are correct, airflows will be designed accordingly. A te adjusting, and balancing procedure for construction and for operation of the facility will be developed during Title Design. Control dampers will be set manually, with no automatic airflow control except fan speed for pressure control and opening of a pressure relief damper.
EPA	1/23/02 Pierre to Dirkmaat LTR	49	CDR, pg 3-49, § 3.6	49. ** The ventilation dampers outlined in the preliminary design are counterbalanced and assumed to be of standard construction. On a relief condition, these dampers may have unacceptable leakage rates. The performance of the dampers should be reviewed.(DR)	The backdraft dampers in this application are only to provide additional resistance to help achieve the desired differential pressure from the WES to outside. The backdraft function is only to eliminate large quantities of air from being forced into the WES by wind. Standard construction dampers designed for the expected wind and pressures are acceptable.
EPA	1/23/02 Pierre to Dirkmaat LTR	50	CDR, pg 3-49, § 3.6	50. The ventilation rate outlined in the preliminary design is listed at 1 cfm per square foot and based on the architectural drawings of 110 ft. by 80 ft for the WES, the minimum airflow is to be 8800 CFM, with a 20 percent contingency, this increases to 10,560 CFM. The airflow quantities listed in the documents are incorrect based on this information. (DR)	Because the RCS and associated access rooms are physically separated from the WES and are ventilated at different, much higher flow rates, the floor area of the rooms is subtracted from the floor area of the WES. Each area within the WES is actually ventilated at a rate at or above 1 cfm/sf.
EPA	1/23/02 Pierre to Dirkmaat LTR	51	CDR, pg 3-49, § 3.6	51. ** The pressure differential for the different zones is listed in this section as well as the requirement for 125 FPM across any breaching. The man doors and overhead doors listed on the architectural drawings will require more airflow than what the fan is capable of providing for ventilation, if the doors are considered a breach in the containment envelope. The fan may not have the capacity with the variable frequency drive to maintain the pressure requirements and the airflow requirements. (DR)	The ventilation system is theoretically capable of providing adequate ventilation for a breach up to 54 sq. ft. Personnel doors are only 21 sq. ft. Opening larger doors will not be allowed without additional administrative protection (i.e., verification that RCS is not contaminated fc removal of overburden, or contamination cc tents and barriers if RCS is contaminated). Where administrative protection is in place, opening of doors is not considered a design basis breach.

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
EPA	1/23/02 Pierre to Dirkmaat LTR	52	CDR, pg 3-49, § 3.6	52. The pressure differential for the WES versus the atmosphere may induce additional loading on the WES framing. There is a need to coordinate pressure loading from the ventilation system with the structural designer and documentation of this coordination and analysis will be needed in the 90% RD/RAWP. (DR)	The differential pressure loading will be evaluated by the structural designer during the Title Design. However, this load is very minor compared to the snow and wind loads required.
EPA	1/23/02 Pierre to Dirkmaat LTR	53	CDR, pg 3-54, § 3.6.2	53. Localized ventilation may be needed in the RCS to counter certain airborne situations should they arise. Portable recirculation filter systems exist that could provide capture and help balance flows within the RCS around sensitive areas. The portable recirculation filter system would discharge within the RCS and not impact the "house" HVAC system. (JM)	This suggestion will be considered during Title Design.
EPA	1/23/02 Pierre to Dirkmaat LTR	54	CDR, pg 3-66, § 3.8.2	54. The CAS audio alarm (and remote alarm "speakers") should be distinctive from CAM alarms and capable of being heard above all ambient and machine noise, both inside and external to the WES. Likewise, the visual signals should be distinctive and widely distributed (strobe lights, etc.). (JM)	The CAS design will comply with applicable INEEL procedures.
EPA	1/23/02 Pierre to Dirkmaat LTR	55	CDR, pg 3-67, § 3.8.3	55. It is stated that glovebox operators place suspect visually unidentifiable combustible material into the FMM well. Considering that a criticality alarm system is a component of the design, using only visual information to sort for disposal and to select suspect material for fissile monitoring is contrary to nuclear criticality safety practices. The glovebox operator needs to have information relating to potential fissile content of all material entering the process. This can be accomplished by using an appropriate RadCon survey instrument to hand survey the waste entering the process, or an installed in-situ monitor that "observes" the loaded transfer cart. (JM)	Please see response to comment #46.
EPA	1/23/02 Pierre to Dirkmaat LTR	56	CDR, pg 3-69, § 3.8.4	56. "* The CCTV monitoring images from each of the three cameras should be recorded (e.g., VCR) for future use in developing plans for future retrievals at the SDA and for addressing characterization issues concerning fate and transport issues. Suggestion: We recognize the resource concern with security clearance of tapes, however, properly cleared agency personnel are available to screen tapes to minimize the need for future security declassification.	Current design has added recording capability for one of the RCS cameras which will focus on the excavation area.
EPA	1/23/02 Pierre to Dirkmaat LTR	57	CDR, pg 3-71, § 3.9	57. Will the RCS and the FFS be cut up for burial? How will the contaminated pieces be handled? How will the trench excavation shield be extracted and decontaminated? Will the trench shield be grouted in place? Please provide a disposal plan for the steel FFS, RCS, PGS and WES. (GG)	The disposition strategy for the FFS, WES, PGS, and RCS has yet to be finalized. A DD&D plan will be prepared, which will define the approach to decontamination and disposition of the project facilities.
EPA	1/23/02 Pierre to Dirkmaat LTR	58	CDR, pg 3-71, § 3.9	58. Add a bullet, "list of potentially reusable structures and equipment."	A DD&D plan will be prepared, which will define the approach to decontamination and disposition of the project facilities and equipment.

22-0251428 LMIT

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
EPA	1/23/02 Pierre to Dirkmaat LTR	59	CDR, pg 4-1, Table 4-1	59. What type of estimating program was used to generate the cost estimate (e.g., parametric)? What is the basis for the listed confidences?	The SuccessTM estimating program was develop and format the estimate to a level o detail consistent with the preliminary baseline information. A combination of several estimating techniques, as outlined in the INEEL Cost Estimating Guide, DOE/ID 10473, were used to satisfy the estimating requirements of DOE Order 413.3. The project team identified possible risks to the project. A sampling of and concurrence by the project team members established the possible effects of the identified risks on the project cost. These data were then input into the @RISKTM software package to calculate and apply the appropriate contingency to the estimate elements using a Monte Carlo simulation technique and triangular distribution. Varying levels of confidence can be documented using this program.
EPA	1/23/02 Pierre to Dirkmaat LTR	60	CDR, pg 5-1, § 5	60. ** As data generated from Stage II will serve to support the Stage III design and/or OU 7-13/14 feasibility study evaluations, a remedial action report is required and needs to be included as a deliverable in the schedule.	A schedule will be developed for the RA Report.
EPA	1/23/02 Pierre to Dirkmaat LTR	61	CDR, pg 6-2, § 6.2	61. Identification of mitigating features in the event of discovery of an fissile material highly overloaded drum should also be addressed both pre and post glovebox, to insure the continued operation of the project if such an event was discovered.	Discovering a concentration of fissile material sufficient to overload a drum (pre or post package) is not an anticipated event. If discovered before packaging (through fissile monitoring of suspect filter media), the strategy is to subdivide the material, re-monitor until e unit piece is below thresholds, and then pa into separate containers. After packaging, an overloaded drum will be identified by drum assay. Special handling procedures for an overloaded drum will be defined by the USQ process if encountered.
EPA	1/23/02 Pierre to Dirkmaat LTR	62	CDR App B, pg B-7, Tbls B1 & B2	62. In the B-1 and B-2 tables, page numbering skipped some even numbers?	The backs of the long pages do not have numbers typed on them - they were intentionally left blank, but were not so indicated on the pages, thus causing confusion.
EPA	1/23/02 Pierre to Dirkmaat LTR	63	CDR App B, pg B-7, Tbl B1	63. ** Table B-1 presents the data objectives for the OU 7-10 Glovebox Excavator Method Project. All samples collected from the waste zone should be analyzed by gamma spectroscopy (a fast and sensitive NDA method). This analysis can provide measurements of the principal TRU nuclides, and can be used to support the drum assay methodology., , QW3 analytical method for weight of container is not correct., , Sampling method column states that "a statistical number of grab samples will be collected and composited from the transfer cartloads, for 80 percent confidence". This statement is confusing. Eighty percent confidence relative to what? The Sampling and Analysis Plan must clearly define the sampling methods and statistical procedures to accomplish a defined accuracy at a stated confidence level (considering the waste "granularity"). (JM)	(1.) Sample analysis will be addressed in the Sampling and Analysis Plan (2.) Agreed, the analytical method listed is not correct. (3) The sampling method will be defined in the Field Sampling Plan. Also, see response to comment #19.

22-0251429 LMIT

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
EPA	1/23/02 Pierre to Dirkmaat LTR	64	CDR App B, pg B-7, Tbl B1, QW1	64. The Measurement and Sampling Method columns indicate that reactive cyanide will be identified through visual inspection and biased samples will be collected where concentrated cyanides are suspected. This should be clarified that only disposed product would be observed.	This will be explained in the RD Submittal.
EPA	1/23/02 Pierre to Dirkmaat LTR	65	CDR App B, pg B-21, Tbl B2, QS-12	65. The objective of this DQO is to characterize the underburden. At what depth(s) will samples be collected in the underburden and will the extent of contamination be determined through collecting samples until clean soil is encountered? (AP)	The sampling method will be defined in the Field Sampling Plan.
EPA	1/23/02 Pierre to Dirkmaat LTR	66	CDR App B, pg B-35, Tbl B2	66. ** Sampling Method Column. This column states the type of samples that will be collected (composite); however, it does not include how this type was determined. Also, this column indicates that the number of samples that will be collected for characterizing waste zone material will be statistically based, but again does not provide specifics. The assumption(s) made about the waste (i.e. homogeneity), and the information already known about the waste is required to support the type and number of samples to be collected. (AP)	The sampling method will be defined in the Field Sampling Plan.
EPA	1/23/02 Pierre to Dirkmaat LTR	67	CDR App C, Dwgs A-6, A-7 & S-1	67. Please discuss the wall type for the Personnel Monitoring, Personnel Access and Transfer Vestibule rooms. These walls are stated in the documentation as being manufactured by Permacon. How are these walls attached to the WES? Do they need to be attached to the WES? Should there be additional structural members under the Personnel Monitoring, Personnel Access and Transfer Vestibule walls similar to the RCS in order to provide structural support of the walls? (GG)	Details regarding the wall types, material, and construction will be developed during Title Design.
EPA	1/23/02 Pierre to Dirkmaat LTR	68	CDR App C, Dwgs. A-7 & S-1	68. Do the scale and charge station need any additional foundation support steel. There is no additional support steel shown on the drawings under these two pieces of equipment. (GG)	These stations should not require any additional steel framing. Final design details will be developed during Title Design.
EPA	1/23/02 Pierre to Dirkmaat LTR	69	CDR App C, Dwgs. A-7 & S-1	69. Please show additional support steel under PGS 2. Are the legs of PGS 2 to fall on the steel floor beams? There is no additional support steel shown on the drawing for PGS 2 as is shown for the other PGS 1 and 3. (GG)	Support will be provided for the PGS as required by the analysis. Final design details will be developed during Title Design.
EPA	1/23/02 Pierre to Dirkmaat LTR	70	CDR App C, Dwg. A-7	70. Please discuss how the walls of the Personnel Monitoring, Personnel Access and Transfer Vestibule rooms will be supported at the top of the wall? Is the roof structure rigid enough to support the walls? (GG)	The rooms will be constructed from self supporting panels designed for applicable loads.
EPA	1/23/02 Pierre to Dirkmaat LTR	71	CDR App C, Dwg. S-1	71. How will the trench box (excavation shield) be installed? According to the text, the excavator is to remove the overburden and place it in the 4'x4' soil bags after the WES and RCS are constructed. This means that the Facility Floor Structure will have been previously installed? Will the trench box be installed incrementally as the excavation progresses? (GG)	The trench box will be installed as part of the facility floor structure and will be in place prior to the removal of the overburden. The plan is to erect the trench box off of the pit, excavate a trench to accommodate the trench box and move the trench box into place with a crane.

22-0251430 LMIT

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
EPA	1/23/02 Pierre to Dirkmaat LTR	72	CDR App C, Dwg S-1	72. How will the Facility Floor Structure be constructed? Will the FFS be partially assembled off site, brought in by truck and fully assembled? Will it be bolted together? Or welded? If welded, is welding permitted in this area? (GG)	The FFS will be assembled with bolted connections. No assembly is planned off site. Partial assembly of sections may be completed in the area adjacent to the pit and moved into position with a crane for final assembly.
EPA	1/23/02 Pierre to Dirkmaat LTR	73	CDR App C, Dwg S-3	73. How will the PGS be attached to the FFS? (GG)	The design concept is to bolt the PGS support legs to the FFS.
EPA	1/23/02 Pierre to Dirkmaat LTR	74	CDR App C, Dwg FP-1	74. Has the issue of the need for a flexible coupling at the Fire Riser Building for the pipes and conduits due to frost heave of the foundation of the building been addressed? (GG)	Piping construction details, components, and materials will be developed during Title Design.
EPA	1/23/02 Pierre to Dirkmaat LTR	75	CDR App C, HV-2	75. "" The HVAC equipment/air flow pattern plan shown in the drawing shows a major component (5324 CFM of a total 6860 CFM) of the RCS air flow entering at a single point on RCS wall near the excavator. Has the RCS air flow pattern been evaluated and is it consistent with the maximum capture of residual airborne contaminants? It appears that the lower corner of the RCS is receiving most of the capture flow. Such a situation can cause adverse conditions within the RCS (spread of contamination, contamination buildup in low flow regions, etc.). The distribution of input and exhaust vents needs to be carefully evaluated with respect to operations. Also, as noted earlier, the effect of venting the excavator exhaust outside the WES must be balanced. (JM)	The 5324 cfm inlet air grille will be relocated "upstream" of the backhoe, either next to or from within the full drum staging/buffer area. The airflow pattern will provide a general sweep of air from north to south through the RCS, with the "cleanest" air being on the west side of the RCS along the operator windows. However, "maximum capture of residual airborne contaminants" is not a major driving parameter for the ventilation system. It is more desirable to leave the contaminants in the RCS rather than to pull them into the filter system. The facility is designed with a dust suppression system which will more effectively provide "capture of residual airborne contaminants." Excavator exhaust be added to the airflow balance.
EPA	1/23/02 Pierre to Dirkmaat LTR	76	CDR App C, Dwg HV-1	76. The heating configuration and quantity is providing a temperature rise of 40-45 degrees F over the entire facility. The introduction of ventilation at below freezing, however, may produce areas within the WES below freezing. The 90% should include a re-check of the heating design to ensure equipment and components do not experience freezing temperatures. The review should include requirements at overhead doors to prevent freezing of equipment and components in the vicinity of the doors. (DR)	The heating criteria for the 90% design has been changed to provide comfort heating to at least 50 degrees F at outside air temperatures as low as -45 degrees F. Additional electric resistance unit heaters will be added to account for the increased heating load.
EPA	1/23/02 Pierre to Dirkmaat LTR	77	CDR App C, Dwg HV-2	77. The fan configuration on the drawing is in conflict with the airflow diagram and the design manual. The design approach is to maintain ventilation with no downtime. The backup fan design would require a parallel ductwork configuration with isolation dampers or manual slide gates for the facility operators to energize and divert airflow on a fan failure. (DR)	The Title Design will include full parallel ductwork and appropriate isolation for maintenance of either fan while the other is in operation.
EPA	1/23/02 Pierre to Dirkmaat LTR	78	CDR App C, Dwg HV-2	78. Suggestion: Please review the proposed filter design for the fan system. The moisture separator is documented to be located downstream of the 30 percent pleated and the secondary filters. The moisture removal may be more efficient if the separator is located prior to the 30 percent filters. This recommendation may require additional cleaning of the separator, but the filter media will be more effective and have a longer functional life.(DR)	This suggestion will be considered during Title Design, with expected filter loading vs. expected moisture loading being evaluated. A point of interest: A typical moisture separator is essentially a metal mesh pre-filter. We may be able to combine the functions into one physical location.

22-0251431 LMIT

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
EPA	1/23/02 Pierre to Dirkmaat LTR	79	CDR App C, Dwg HV-2	79. The filter system is designed for filter replacement while the fan is in operation. The negative pressure in the filter housing is excessive and may make filter replacement difficult. A parallel arrangement may be more effective. (DR)	The filter housing consists of three banks of three filters. Each bank is in parallel with the others, with full isolation capability for each bank. This allows for isolation and changeout of 3 filters while the other 6 are in operation.
EPA	1/23/02 Pierre to Dirkmaat LTR	80	CDR App C, Dwg HV-2	80. The filter system is designed for filter replacement outside the RCS. The filter media will be contaminated with elements from the RCS. Will the media replacement procedure introduce contaminants into the WES? (DR)	The filter housing will be a bag-in/bag-out type housing, with complete isolation of contaminated filters from the WES.
EPA	1/23/02 Pierre to Dirkmaat LTR	81	CDR App C, Dwg HV-2	81. The present design may short circuit the ventilation through the RCS. (DR) Suggestion: It is recommended that the inlet air grilles be located to assist in the dust mitigation by moving airflow from north to south across the face of the excavator.	Each inlet air location will be balanced to prevent short circuiting. In addition, the 5324 cfm inlet grille will be deleted and a new inlet grille will be located "upstream" of the backhoe, either near or from inside the full drum staging/buffer area.
EPA	1/23/02 Pierre to Dirkmaat LTR	82	CDR App D, pg D-11	82. The waste retrieval and packaging operation is presented in the process logic diagrams. Suggestion: The process of sampling in the glovebox presents a number of operational issues that cost time and potential quality. Sampling materials and containers must be introduced to the glovebox, and the containers decontaminated and removed from the containment. With a potential for greater than 500 samples, this introduces a complexity that could be avoided through a small design change. Consideration should be given to designing into the glovebox a sampling port where the sample container remains outside the principal glovebox work environment. A number of alternatives exist to accomplish this objective. (JM)	The design will employ an alpha can (or "French" can) type transfer port for sample removal to remove the concern for contamination spread. The sample would be removed in a separate confinement so that the exterior of the can remains clean. The interior will always be considered contaminated. The time required for sample removal is significantly reduced with this concept.
EPA	1/23/02 Pierre to Dirkmaat LTR	83	CDR App D, pg D-17	83. The laboratory analysis and sample handling logic is presented. Prior to opening the sample bottle and obtaining subsamples, the sample should be subjected to NDA gamma spectroscopy analysis for radionuclides (Pu, Am, and others). This information is important for a complete characterization of the radioactive waste sample. Understanding the distribution of the principal radionuclides between various samples and sample types, and at a much greater sensitivity that can be achieved through drum assay, provides valuable characterization information on the waste zone materials. (JM)	Sampling and analysis will be addressed in the Sampling and Analysis Plan. Also, see response to comment # 19.

22-0251432 LMIT

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
EPA	1/23/02 Pierre to Dirkmaat LTR	84	Section 2.2, App A, pg 2-2	84. The assumptions regarding characterization are limited to analyses directed at safe storage and AMWTF acceptance. Since a considerable amount cost is involved with satisfying these two objectives, which do not directly relate to environmental data or DQOs (in the true sense of the DQO process), some effort needs to be directed at environmental data pertinent to understanding the environmental dynamics of the waste zone retrieval. The principal objective of the glovebox excavator method project is to demonstrate retrieval. Although the revised retrieval operation will involve considerably more mixing of the waste zone (interstitial soil and waste), this should not be a reason for not characterizing interstitial soil (soil material represents 2/3 the volume of material in pits and trenches). (JM).	Characterizing interstitial soil is not a defi project objective. Characterization only needs to take place to support waste zone material disposition. Additional characterization will lengthen the schedule and increase costs.
EPA	1/23/02 Pierre to Dirkmaat LTR	85	TFR, pg 1, § 1	85. "* Should add a bullet stating, "Provide a check against the disposal location information data base."	This is not an agreed objective of the demonstration retrieval project, as defined in the October 1, 2001 report.
EPA	1/23/02 Pierre to Dirkmaat LTR	86	TFR, pg 3, § 1.4	86. Suggestion: The term "transuranic" means all nuclides with atomic number greater than 92. The acronym TRU can be used to define a subset of the transuranic population (i.e., TRU waste). Therefore, remove the word "transuranic" from the definition, and let stand the term "TRU". (JM)	Will change the definition of transuranic (TRU) to read, "Those elements with an atomic number greater than that of uranium (i.e., atomic number greater than 92)." This is from DOE G 435.1-1 Chapter III, p III-2.
EPA	1/23/02 Pierre to Dirkmaat LTR	87	TFR, pg 11, § 3.1.2.1	87. Item 6 states that the project shall use methods and techniques to minimize the spread of contamination from waste zone material into the overburden and underburden material. Verification is stated as "analysis". Where in the DQOs are the analysis requirements defined to satisfy this objective? (JM) Suggestion: Unrelated to DQO's, it may also be best to separate the discussion of overburden from underburden as the excavation process does not appear to minimize the spread of contamination to the underburden.	The verification method should be changed "demonstration" (demonstrated via implementation of the planned process/ techniques). The operation of removing the overburden shall be completed prior to penetrating the waste zone, thus preventing contamination by the waste zone material. Underburden will be left in place as the waste zone material is removed. Surface contamination of the underburden from the waste zone material will occur, however contamination below the surface should be minimized.
EPA	1/23/02 Pierre to Dirkmaat LTR	88	TFR, pg 12, § 3.1.2.3	88. Items 4 & 5 state that the project shall characterize waste zone material for disposition to AMWTF and sample underburden. The verification is indicated as "demonstration". It appears that "analysis" should be included in the verification statements. (JM)	"Analysis" will be added to the verification methods for 3.1.2.3-4 and 5.
EPA	1/23/02 Pierre to Dirkmaat LTR	89	TFR, pg 12, § 3.1.2.3	89. "* This section attempts to describe the technical and functional requirements for sampling and analysis. However, this section is less than a page in length and does not contain any detailed information as to how sampling and analysis will take place to meet project goals. This will need to be detailed in the 90% RD/RAWP. (AP)	Detailed information for sampling and analysis will be provided in the Field Sampling Plan.
EPA	1/23/02 Pierre to Dirkmaat LTR	90	TFR, pg 14, § 3.1.2.5	90. Suggestion: It should be noted that if a significant TRU content existed, (e.g., discovery of a 'hot spot'), the overburden would not be considered to be at a low risk-based concern level.	Statement noted. As discussed in Section 3.1.1 of the CDR, if material is encountered during overburden retrieval that exceeds operating thresholds, the condition is mitigated and the retrieval of overburden is continued in a neighboring area.

22-0251433 LMIT

OU 7-10 GLOVEBOX EXCAVATOR PROJECT -
RESPONSES TO AGENCY COMMENTS ON DRAFT CDR

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
EPA	1/23/02 Pierre to Dirkmaat LTR	91	TFR, pg 16, § 3.2.3	91. "" Item 2 states that the project shall ensure that drums are not overloaded relative to the fissile content of the final package. The basis statement indicates process knowledge (and visual inspection) will be used to select the waste streams for fissile monitoring. However, it appears that process knowledge is based on an assumption that current SWEPP information on recently stored TRU wastes is applicable to Pit 9 wastes, ignoring available RFP assay data of pre-1970 wastes. , , Also, if verification involves demonstration and analysis, "front-end" information on potential fissile content of material entering the process is required. A visually based "process knowledge" decision is not consistent with nuclear criticality safety practices. (JM)	The proposed visual inspection process has been approved by both DOE and INEEL Criticality Safety. Operational plans are being developed to address the visual identification criteria along with the further development of engineering data to support conclusions as to which wastes need to be assayed prior to the placement of the waste material into a waste drum.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	92	General	1. A public address (PA) system should be installed in the RCS and WES. This inexpensive system would enhance general operations and significantly assist in casualty control efforts.	A PA system is not required. Communication within the facility will be consistent with INEEL requirements and provided via wireless devices.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	93	General	2. Video recording of the waste excavation process must be considered. Information from these recordings would prove invaluable to future remediation efforts, and would significantly improve waste origination point determinations if desired. Video camera use for excavator operations is already included in the project design, therefore recording of the excavation would be an extremely minor expense relative to project cost. These recordings could be edited as needed to remove any inclusion of classified information.	Video recording of the excavation area has been added to the project scope.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	94	General	3. Please add more detail to the project schedule.	The level of detail provided in the schedule contained in the CDR is considered to be sufficient. However, an updated version of this schedule, showing status and progress, can be provided to the agencies and discussed in the weekly conference calls. Questions and responses can be included in the weekly calls.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	95	CDR, pg 3-5, Sec 3.1.1	4. "Overburden Removal Highlights", Bullet 2 indicates that the soil will be packaged in 4 x 4-ft soil sacks. Please revise this statement to read 4 x 4 x 4-ft sacks.	The anticipated design for soil sacks are 4 X 4 X 4 feet. As agreed in the December 18 and 19 DOE, EPA, IDEQ meeting, there are no plans to revise and re-issue the CDR. Rather, the project will proceed in accordance with agreed comment resolution. The design will be finalized during Title Design.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	96	CDR, pg 3-7, Sec 3.1.2	5. The first paragraph after Figure 3-4 states "...discharges a fine water mist before to excavation". Please revise this to read "...discharges a fine water mist before excavation".	As agreed in the December 18 and 19 DOE, EPA, IDEQ meeting, there are no plans to revise and re-issue the CDR. Rather, the project will proceed in accordance with agreed comment resolution. The design will be finalized during Title Design.

22-0251434 LMIT

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
IDEQ	1/24/02 Nygard to Dirkmaat LTR	97	CDR, pg 3-7, Sec 3.1.2	6. Bulleted item 2 states that outlier items will be bagged out of the PGS and possibly returned to the excavation pit. Consideration should be made to developing a process whereby such items con be placed back on the transfer cart and returned to the excavator bucket for direct return to the pit. Bagging out such items, then transferring them back into the RCS seems inefficient. Possible solutions include modifying the transfer cart to allow dumping items back into the excavator bucket, or perhaps the use of a simple metal slide to return materials to the pit directly.	Numerous methods of returning material are currently provided by the design, including bagging into the RCS through the sample port, passing in through the equipment or personnel access doors, bagging a 55 gal drum in through a drum port, or by lifing the object out of the transfer cart with the excavator. The proper method is dependent on the size and form of an object and would be described in special handling procedures written for disposition when an outlier is encountered.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	98	CDR, pg 3-7, Sec 3.1.2 AND others	7. Bulleted item 3 states "Unidentifiable combustible material is segregated to verify fissile content prior to packaging." Items such as HEPA filters may well be identifiable, and are considered to potentially contain plutonium. Please revise this statement to read "Unidentifiable combustible material, and material suspected of containing fissile elements, is segregated to verify fissile content prior to packaging." This is a global comment, and applies to all such statements throughout this submittal (including Process Logic Diagrams).	See comment #46. An engineering basis will be used to determine the disposition of all waste matrices as to whether or not they need to be fissile monitored prior to placement into the waste package. This will be completed in the process of finalizing the Criticality Safety Evaluation (CSE) and the Documented Safety Analysis (DSA). Once this list is determined operational personnel will be trained regarding these operational parameters.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	99	CDR, pg 3-11, Sec 3.1.3, Tbl 3-2	8. Redox potential testing to ascertain oxidizing or reducing conditions in the underburden would be beneficial to understanding the potential oxidation state and thus transport properties of actinide COCs. The probes that were to be installed in other areas of the SDA apparently could not fulfill this purpose. However, as normal redox testing would involve the placement of an in-situ probe, which will not occur in this underburden sampling, we encourage DOE to explore other known test methods to obtain redox potential on these ex-situ samples.	Determining redox potential is not in the current scope of the project.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	100	CDR, pg 3-43, Sec 3.5.6	9. The first full sentence on this page states "The bottom half of the stub is placed in the drum, the drum lid is attached, and the drum is removed from the loading station." Please revise to include that the drum is verified free of contamination prior to removal from the loading station in this sentence.	As agreed in the December 18 and 19 DOE, EPA, IDEQ meeting, there are no plans to re-issue the CDR. Rather, the project will proceed in accordance with agreed comment resolution. The design will be finalized during Title Design. Normal Radcon procedures will require the drums to be verified free of contamination prior to removal.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	101	CDR, pg 3-49, Sec 3.6.1	10. The second to last paragraph on this page raises the subject of high humidity during certain atmospheric conditions. High humidity is know to cause problems with HEPA filter operation and efficiency. What precautions have been implemented to preclude this condition?	Inlet air filters in the WES are not HEPA. Air will be sufficiently heated prior to entering the RCS HEPA inlet filters to prevent this condition.

22-0251435 LMIT

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
IDEQ	1/24/02 Nygard to Dirkmaat LTR	102	CDR, pg 3-49, Sec 3.6.1	11. The second to last paragraph on this page states that no inlet air preheating will be included. In the event of winter operations, glove box (PGS) temperature will be entirely controlled by the temperature of the outside ambient air. Since manual dexterity is of paramount importance for material handling in the PGS; inlet air preheating should be utilized. It is worthy of note that personnel will be using resizing tools and handling potentially sharp edged metal debris in the PGS.	The internal temperature requirements have bee changed for this reason. The new requirement i: + 50 deg. F (inside) at -45 deg F (outside).
IDEQ	1/24/02 Nygard to Dirkmaat LTR	103	CDR, pg 3-50, Sec 3.6.1, Fig 3-36	12. Figure 3-36 indicates that the four RCS air inlets include HEPA filters. Please also indicate on this figure that the RCS air outlet is also HEPA filtered.	As agreed in the December 18 and 19 DOE, EPA, IDEQ meeting, there are no plans to re-issue the CDR. Rather, the project will proceed in accordance with agreed comment resolution. The design will be finalized during Title Design.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	104	CDR, pg 3-51, Sec 3.6.1	13. The first sentence on this page states that "The heat required for freeze protection is more than that required for comfort heating, thus, freeze protection is not provided by the heating system." It appears that the word "more" should be replaced by the word "less" in this sentence. Please clarify.	Comment is correct. However, as agreed in the December 18 and 19 DOE, EPA, IDEQ meeting, there are no plans to re-issue the CDR. Rather, the project will proceed in accordance with agreed comment resolution. The design will be finalized during Title Design.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	105	CDR, App B, pg B-31, Tbl B-2	14. Data Quality Objectives, DQO Reference Number QW7: This DQO appears to have been deleted, but has not stated "Reason for Modification" given in this table. Please clarify.	The rationale for modification was inadvertently omitted in the Supplement Document. The rationale should read as follows: DELETE – For the Glovebox Excavation Method, interstitial soil, stained soils, and waste are considered together as waste zone material as described in The WAC 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 4.3.1 and in Figure 4.3-2. Per Section 3.3, Stage II material is being characterized for safe storage and acceptance b AMWTF.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	106	CDR, App B, pg B-37, Tbl B-2	15. Data Quality Objectives, DQO Reference Number QP3: This DQO appears to have been deleted, but has not stated "Reason for Modification" given in this table. Please clarify.	QP3 should appear with a revision to exclude detailed cost information to support Stage III (the revision rationale appears in red with strikeouts i App. B, pg.B-37.) Cost data to store retrieved materials pending disposition are required as per TFR 3.1.2.5-5.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	107	CDR, App C, sht C-2	16. Drawings, "Improved Enlarged Site Plan": This sheet includes the outline and call out label for the previous phase II design 20 x 20 foot excavation area. This information is not needed on this sheet. Please revise.	As agreed in the December 18 and 19 DOE, EPA, IDEQ meeting, there are no plans to re-issue the CDR. Rather, the project will proceed in accordance with agreed comment resolution. The 20 x 20 foot area was shown on the CDR to help project personnel and reviewers to know tha the excavation is in the same general area as the previous plan. Showing the 20 x 20 foot area on the actual construction drawings or plot plans is not necessary.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	108	CDR, App C, sht A-8	17. Drawings, "Excavator Plan and Sections": The plan view on the right half of this sheet appears to be missing the "Alternate Position for Excavator", the "Excavator Arm and Bucket", and the "Equipment Change Area" depictions. Also, the Equipment Change Area call-out includes the word "Equipment" twice. Please revise.	As agreed in the December 18 and 19 DOE, EPA, IDEQ meeting, there are no plans to re-issue the CDR. Rather, the project will proceed in accordance with agreed comment resolution. The drawings will be corrected during Title Design.

22-0251436 LMIT

OU 7-10 GLOVEBOX EXCAVATOR PROJECT -
RESPONSES TO AGENCY COMMENTS ON DRAFT CDR

REVIEWER	REF.	#	Doc & Page	COMMENT	RESPONSE
IDEQ	1/24/02 Nygard to Dirkmaat LTR	109	CDR, App C, sht P-2	18. Drawings, "Dust Suppression System Isometric": The fog nozzle placement appears to interfere with excavator bucket operation during the phase where the bucket dumps waste into the PGS cart. If so, please modify the design. Also, consideration for utilizing a device for preventing damage to the nozzles from inadvertent contact with the excavator bucket should be addressed. Options include a simple metal bracket/bar devise in close proximity to the nozzles.	Interference checks will be performed dur. Design.

22-0251437 LMIT

2.3 CD-1 Comment Resolution Discrepancies

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	1	GENERAL	1. ** In order to provide a full review of these structures it is imperative that the final structural calculations and documentation be provided prior to construction reviewed for the WES, PGS and the RGS. (GG) Suggestion: If it is desired to start construction prior to submittal of the 90% RD, that portion of the RD/RAWP can be submitted separately	The RD Report will be submitted to the Agencies in accordance with the project schedule and not later than 10/31/02. Agency review of final structural calculations and documentation prior to construction was not part of the agreement. This step would increase the schedule significantly. This comment, and a number of others, refers to an RD/RAWP. The agreement only calls for the submittal of an RD (Remedial Design) Report to the regulators. Submittal of an RAWP (Remedial Action Work Plan) will be cause for significant schedule delay. This response applies to other comments in which reference is made to an RAWP.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	2	GENERAL	2. The FFS design calculations and documentation should be provided prior to construction, for review. The floor system is a critical item that must work properly for the project to complete the intended task. (GG) Suggestion: If it is desired to start construction prior to submittal of the 90% RD, that portion of the RD/RAWP can be submitted separately	The RD Report will be submitted to the Agencies in accordance with the project schedule and not later than 10/31/02. Agency review of final structural calculations and documentation prior to construction was not part of the agreement. This step would increase the schedule significantly.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	3	GENERAL	3. The DD&D section is very general and does not address how the structure will be dismantled. This should be covered in the 90% RD/RAWP.	Since the DD&D of the Glovebox Excavator Method Project facilities will not be bid as part of the construction effort, this information will not be included with the Title Design documents. The project is in the process of planning for the DD&D of the facilities, which will occur subsequent to the completion of operations and excavation closure activities. This information will be included in a DD&D Plan, which will be prepared prior to completion of operations.	Resolved. The Facility Shutdown and DD&D Preplan will be submitted with RD package.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	4	GENERAL	4. A Sampling and Analysis Plan will be required for the 90% RD/RAWP. Suggestion: Information, including how the type and number of samples will be determined, along with specific assumptions, DQO's, and statistical calculations necessary to determine the type and number of samples to collect to meet overall project DQO's, will be required.	A Sampling and Analysis Plan will be included as part of the RD Submittal.	Resolved. Covered in SAP/FSP.
EPA	1/23/02 Pierre to Dirkmaat LTR	5	CDR, pg 3-3, § 3.1	5. This document indicates that project functions will take place 24 hours a day with four shifts of workers working 12 hours shifts, 4 days on and 4 days off. A 12 hr shift may lead to fatigue and error. Suggestion: There should be a discussion of whether the potential for human errors are increased with a 12 hr schedule and whether there is related operational history, e.g., at INTEC which serves as a basis for this schedule.	The operations planning documentation will address shift staffing, rotations, and scheduling. INEEL operations experience and lessons learned will be included in the overall operations plan.	Contrary to the original response, there are no operations planning documents that cover this subject. 12-hr rotating shifts are a standard shift for the INEEL. Many studies were conducted prior to implementing this work schedule. Results of those studies can be obtained from the HR department.
EPA	1/23/02 Pierre to Dirkmaat LTR	6	CDR, pg 2-3, § 2.3	6. General objectives Suggestion: There are significant differences in characterization information provided by the original Stage II compared to the Glovebox Excavator Method Project. Since sampling and analysis for safe and compliant storage involves about 500 samples, one should evaluate sampling and analytical choices that would develop some waste zone characterization consistent with the original Stage II objectives. For example, the interstitial soil component of the waste zone represents a major single component fraction. The Glovebox Excavator Method provides an opportunity to derive important characterization information relative to this component (even recognizing the "mixing" inherent with the retrieval method). Evaluation of a retrieval strategy would require this information (especially plutonium and americium content). (JM)	The agreed upon plan is to conduct only the minimum characterization required for acceptance into the Advanced Mixed Waste Treatment Facility (AMWTF). Evaluation of sampling and analytical choices to develop waste zone material characterization and the associated sampling and analytical work would add to the cost and time to complete the work.	Needs to be revisited per baseline change eliminating AMWTF.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	7	CDR, pg 2-3, Fig 2-2	7. The third item in this table states the author(s) will include treatability study testing, and then in the adjacent column it states that treatability study testing has been deferred. Please explain how and when treatability studies will take place, as it is necessary at some point. (AP)	Treatability studies are not in the scope of the project.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	8	CDR, pg 2-3, Fig 2-2	8. Last item. Does the proposed weather enclosure serve any mitigative function in case of failure of the primary confinement? (AP)	The Weather Enclosure Structure (WES) is not identified in the Safety Analysis as serving any mitigative function in case of failure of a primary confinement.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	9	CDR, pg 2-4, Fig 2-3	9. This Figure states, "The multi disciplinary team used a tailored EPA process to develop the DQOs." This tailored process has produced very general DQOs in Appendix B, which do not indicate to the reader how an 80% confidence interval was chosen or what the consequences are of having decision errors. (AP)	Specific criteria are dependent on the Advance Mixed Waste Treatment Facility (AMWTF) waste acceptance criteria (WAC), which are being prepared. Further details will be developed during Title Design.	The WAC for AMWTF is no longer the driver. The DQOs will be revisited to address the baseline change that takes AMWTF out of the assay and storage solution. The revised document will be submitted for Agency review before October 31, 2002.
EPA	1/23/02 Pierre to Dirkmaat LTR	10	CDR, pg 3-4, § 3.1, Tbl 3.1	10. Sampling requirements for overburden indicate "none required". Although a sampling plan is not required; RadCon coverage of the operation should include field surveys during the removal process. These data represent a form of sampling and process control, and should be recognized. (JM)	Field surveys of packaged material are performed for safe handling. These surveys are in-process measurements and are not planned to be addressed in the DQO's or Field Sampling Plan.	Resolved. Covered in SAP/FSP.
EPA	1/23/02 Pierre to Dirkmaat LTR	11	CDR, pg 3-5, § 3.1.1	11. The 90% RD/RAWP will need to provide the method that shows how the excavated soils will be placed in the soil bag. (GG) Suggestion: This could entail a frame to support the soil bag. The frame would be helpful because it would minimize the loss of soil during the loading the bags	The current design concept is that the soil sacks will be supported in a box or a frame for loading. Additional details will be developed during Title Design.	Resolved. Frame and cartridge system are shown in drawings 522673, 522674, 522675, and 522676.
EPA	1/23/02 Pierre to Dirkmaat LTR	12	CDR, pg 3-5, § 3.1.1	12. The 90% RD/RAWP needs to include specifications on the soil bag, including the weight limit to the bags so they are not overloaded and break unnecessarily. (GG)	The soil bags will be specified in the Title Design.	It was determined during Title design that a specification was not required. This element is available as an off-the-shelf item from TRANSPORT PLASTICS, Inc. The part number for the soil bag is 11-LL4848. The rated capacity is 16,000 lbs.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	13	CDR, pg 3-5, § 3.1.1	13. The statement "contamination that exceeds operating limits is encountered" needs some explanation. Are airborne radioactivity CAM alarms the only control? Or are field surveys results by RadCon personnel also used for contamination control limits? Figure pg 3-3 should indicate in the "Remove" box that radcon surveys/monitoring is involved. (JM)	Further details will be provided in the process descriptions provided in the RD Submittal.	Resolved. These comments have been or are being addressed in the Excavation Plan and Sequential Process Narrative document (INEEL/EXT-02-00703), which will be submitted after the RD submittal and before October 31, 2002.
EPA	1/23/02 Pierre to Dirkmaat LTR	14	CDR, pg 3-10, § 3.1.3, 2nd Para	14. ** This section states, "To meet waste zone material sampling objectives, random composite samples of non-debris, waste zone material (soil and sludge) are collected from the transfer cart in the glovebox." It is unclear whether this random composites will be obtained intra or inter transfer cart. Composite sampling of discrete waste or soil types appears inappropriate. Suggestion: Need to clarify what the Principle Study Questions are before determining the appropriate sampling approach.	Interstitial soil and waste will be removed together as waste zone material. The sampling of the waste zone material in the glovebox supports safe storage and material disposition. Because the Advanced Mixed Waste Treatment Facility (AMWTF) Waste Acceptance Criteria (WAC) is still being negotiated, the Principle Study Questions and solutions are subject to change. This information will be presented in the RD Submittal. The sampling method will be explained in the Field Sampling Plan.	Resolved at one time (covered in SAP/FSP) but will need to be revised due to the baseline change that eliminates storage of retrieved waste at AMWTF.
EPA	1/23/02 Pierre to Dirkmaat LTR	15	CDR, pg 3-10, § 3.1.3, 2nd Para	15. ** The section also states, "The project team determines the number of samples to statistically characterize the waste stream as a single population with a confidence interval of 80% consistent with guidance from SW-846." The assumptions being used to support these statistics, what statistical equations will be used, and what information will be used from previous characterization efforts need to be detailed in the 90% RD/RAWP. Suggestion: The appropriate statistics to use is waste stream dependent unless the only comparison being made is against background.	Interstitial soil and waste will be removed together as waste zone material. The sampling of the waste zone material in the glovebox supports safe storage and material disposition. Because the Advanced Mixed Waste Treatment Facility (AMWTF) Waste Acceptance Criteria (WAC) is still being negotiated, the Principle Study Questions and solutions are subject to change. This information will be presented in the RD Submittal. The statistical approach will be explained in the Field Sampling Plan.	Resolved at one time (covered in SAP/FSP) but will need to be revised due to the baseline change that eliminates storage of retrieved waste at AMWTF.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	16	CDR, pg 3-10, § 3.1.3	16. Additionally, this section states that eight core samples of underburden will be collected to obtain migration information about COC. What statistical process will be used to determine sample locations needs to be described in the 90% RD/RAWP. Suggestion: It is also important to identify whether the cores will be driven to refusal or whether only the top 12" to 24" of underburden will be sampled.	The sampling method will be presented in the Field Sampling Plan.	Resolved. Covered in SAP/FSP.
EPA	1/23/02 Pierre to Dirkmaat LTR	17	CDR, pg 3-10, § 3.1.3	17. The waste zone material sampling description is obviously oversimplified at the 10% RD/RAWP. A Sampling and Analysis Plan in the 90% RD/RAWP will be necessary to define in specific detail the sampling methods and statistical procedures necessary to meet DQOs. The plan must clearly define the sampling methods and statistical procedures to accomplish a defined accuracy at a stated confidence level (considering the waste "granularity"). (JM)	A Sampling and Analysis Plan will be included in the RD Submittal. This plan will explain the sampling methods and statistical procedures to accomplish a defined accuracy at a stated confidence level.	Resolved. Covered in SAP/FSP.
EPA	1/23/02 Pierre to Dirkmaat LTR	18	CDR, pg 3-10, § 3.1.3, 1st Para	18. The last sentence in this paragraph states that "Overburden is not sampled, as the material is returned to the pit following excavation of the waste zone material." Why is the overburden being automatically returned to the pit, when it may have been contaminated, without sampling this is unknown. (AP)	The issue of the overburden has been discussed in phone conversations with the Agencies (Nov. 2001), wherein it was agreed that the overburden is presumed non-contaminated to a depth of 3.5 feet, and suitable for return to pit.	Resolved by original response. For clarification, the overburden will be removed and staged in a manner that reduces the possibility that it becomes contaminated. This process is described in the Excavation Plan and Sequential Process Narrative document (INEEL/EXT-02-00703). Additional information on the state of the overburden will be gained during the planned radiological screening surveys to be performed periodically during removal. Several alternatives for final disposition exist and include, for example, return to pit for reuse as overburden and disposal at the ICDF. The selected alternative will be appropriate for the material based on the accumulated process knowledge, the implementation cost, and what, if any, additional characterization is required by the disposition path.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	19	CDR, pg 3-11, § 3.1.3	19. Suggestion: Table pg 3-2 lists different types of analyses for the different classes of materials. All samples should be analyzed by NDA gamma spectroscopy for TRU nuclides and other potential contaminants prior to the specified chemical analyses. The method is fast and inexpensive, and provides useful information on a principal contaminant of the waste zone. Most laboratories performing mixed waste analyses for chemical constituents require knowledge of the radioactivity content of the sample (or they analyze it prior to chemical processing). (JM)	All waste drums will be assayed to characterize radioactive and TRU constituents per the Advanced Mixed Waste Treatment Facility (AMWTF) waste acceptance criteria (WAC). The project will estimate sample activity for shipping to the on-site laboratory. The laboratory may scan for Facility Inventory Limits.	Resolved at one time (covered in SAP/FSP) but will need to be revised due to the baseline change that eliminates storage of retrieved waste at AMWTF.
EPA	1/23/02 Pierre to Dirkmaat LTR	20	CDR, pg 3-11, Tbl pg 3-2	20. ** The title of this table states, "Waste zone material and underburden samples undergo different analyses for different purposes." It is our position that the waste zone is not homogeneous. Also, the interstitial soil is influenced by individual releases from waste containers and is also not homogeneous. Justification will be required for the sampling strategy and analyses in the 90% RD/RAWP.	The retrieved waste and interstitial soil are considered a single waste (waste zone material). Sampling is performed to characterize this waste for safe storage and acceptance into the AMWTF.	Actually, there are now two waste streams, one for soil, sludges, and combustible debris and another for noncombustible debris (e.g., metal). However, sampling will only be performed on the first waste stream. Sampling requirements are no longer driven by AMWTF acceptance criteria and will be reflected in the revised FSP and DQOs to be submitted to the Agencies before October 31, 2002.
EPA	1/23/02 Pierre to Dirkmaat LTR	21	CDR, pg 3-11, § 3.1.3, 4th Para	21. This section indicates what laboratories may be used for sample analyses. Please indicate if PE samples will be sent to these laboratories prior to analysis and the QA/QC criteria the laboratories will be held to. (AP)	Performance evaluation (PE) samples, if necessary, will be addressed in the Sampling and Analysis Plan as part of the RD Submittal.	Resolved. Covered in SAP/FSP.
EPA	1/23/02 Pierre to Dirkmaat LTR	22	CDR, pg 3-12, § 3.1.4	22. This section briefly describes the duties of glovebox operators relative to waste characterization. Will the glovebox operators have available RadCon instrumentation to survey the waste received into the glovebox (other than the fissile/TRU material well monitor)? Appropriate survey instrumentation can provide useful characterization data and quickly resolve issues relative to suspect material. (JM)	Each cart load that comes into the glovebox will be surveyed by a radcon technician located outside the confinement.	Resolved by original response.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	23	CDR, pg 3-12, § 3.1.4	23. This section states, "The glovebox excavator project must maintain data records of each waste zone material drum, and a simple data management strategy supports this requirement." Waste zones will need to be defined in the 90% RD/RAWP.	The sentence simply refers to drums from the waste zone; i.e., the zone between the overburden and underburden. There are no other plans to zone the material.	Resolved by original response
EPA	1/23/02 Pierre to Dirkmaat LTR	24	CDR, pg 3-12, § 3.1.4	24. Suggestion: This section also states that only paper forms will be used for data management. Procedures may be needed to protect these forms from contamination during process operations? (AP)	All forms will be processed in noncontaminated areas. Rad Con may determine in procedures that a survey of hard copy data is necessary before leaving the WES.	Resolved. by original response
EPA	1/23/02 Pierre to Dirkmaat LTR	25	CDR, pg 3-12, § 3.1.4, 7th Para	25. This section states that mercury and volatile organic compounds will not be included in air pollutant monitoring. An EDF or equivalent will be needed to support this conclusion.	A revision to the project Air Emissions Evaluation EDF will be generated as part of the project effort. The EDF will provide a basis for the assumption that VOC and Hg monitoring would not be performed.	Resolved. Document in EDF-2322.
EPA	1/23/02 Pierre to Dirkmaat LTR	26	CDR, pg 3-12, § 3.1.4, 7th Para	26. This section also states that if the HEPA filters fail, an alarm will sound. Procedures to prevent releases of contamination if the HEPA filters fail should be addressed in the 90% RD/RAWP	The HEPA filters will be monitored for failure and the stack emissions will also be monitored for contamination. An alarm for either upset condition will notify personnel for initiation of emergency procedures that are to be developed.	There is an alarm for the stack only. There is no delta-P alarm. The HEPA filters will be monitored to determine their status (manual readings). Emergency procedures will be developed to respond to stack alarms and HEPA filter failure. They are currently in draft form. Procedures are not part of the RD submittal, but outlines will be included in the O&M Plan, which is part of the submittal.
EPA	1/23/02 Pierre to Dirkmaat LTR	27	CDR, pg 3-14, Fig 3-7	27. This figure is an operations process model screenshot. Unfortunately, this figure is not clearly explained and should be addressed in the 90% RD/RAWP	The figure was included in the report to help communicate what a discrete event model looks like. The models will be updated as the process definition further develops in Title Design. Further explanation of the model, its inventory and time inputs and results will be developed during Title Design.	Resolved. Documented in EDF-2158 that is included in the RD submittal.
EPA	1/23/02 Pierre to Dirkmaat LTR	28	CDR, pg 3-13, § 3.1.4	28. Figure 3-6 indicates the assay trailer provides TRU content and radionuclide content. What are the requirements for radionuclide content? The DQOs state TBD. Although we would think that we should have some idea at this point as to the requirements for safe storage and acceptance at AMWTF, all waste zone samples should receive an NDA by gamma ray spectroscopy. This would be independent of the assay and provide additional information at higher sensitivity. (JM)	The requirements of the drum assay will be determined in Title Design. AMWTF may assay the drums for OU 7-10 thus eliminating need of a dedicated assay trailer and the establishment of assay requirements since they would come from AMWTF. OU 7-10 is currently developing the sampling process. The process will be finalized in Title Design. Also, see response to comment #19.	The resolution to this comment is being revisited due to the baseline change that eliminates storage of retrieved waste at the AMWTF. Resolution will be reflected in documents included in the supplemental RD storage submittal to be provided to the Agencies before October 31, 2002.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	29	CDR, pg 3-14, Fig 3.7	29. This provides the operations process model screenshot. The process illustrated indicates that the packaged overburden is assayed, and the drum count in the figure suggests that some overburden is stored in drums? Please clarify. (JM)	Overburden is not assayed and is stored in soil sacks. The model at the CDR level utilizes a 55-gal drum as the discrete unit volume for time estimating. As the model matures during Title Design, these details will be clarified. Per comment 27, further explanation of the model will be provided in the RD Submittal.	Resolved. Documented in EDF-2158 that is included in the RD submittal.
EPA	1/23/02 Pierre to Dirkmaat LTR	30	CDR, pg 3-15, § 3.1.6	30. Do the surfaces that are to be painted need to be prepared? (Paint does not stick very well to dusty and dirty surfaces). (GG)	Specifics regarding **painted surfaces** will be addressed in Title Design.	Resolved. No, the surfaces do not need to be prepared. The paint to be used is a strippable paint. This is documented in the "Facility Shutdown Plan and D&D&D Preplan". Stippable paint is designed to stick to surfaces with contamination, dirt, and debris.
EPA	1/23/02 Pierre to Dirkmaat LTR	31	CDR, pg 3-15, § 3.1.6	31. Will the grout that is to be pumped into the pit be mixed on site or will it be delivered to the site in a "ready-mix" truck? Is there a need for a grout pump truck for grout placement? How would the arm of the pump truck be handled if it became contaminated during the grouting process? (GG)	Details regarding **grouting** will be developed during Title Design.	Resolved. The grout will be delivered in a "ready-mix" truck, and pumped with a grout pump truck. The grout pump truck pumps into a hose outside the WES that is connect to a hose running through the WES and then into a hose in the RCS. This process is documented in the Facility Shutdown and DD&D Preplan (PLN-343) that is included in the RD submittal.
EPA	1/23/02 Pierre to Dirkmaat LTR	32	CDR, pg 3-21, § 3.2.3	32. The heating requirements/freeze protection for Fire Riser Building. The report mentioned insulation of the building, but a source of heat is not addressed? (DR)	The **Fire Water Riser House** will be heated by a small electric heater. The source of **power** will be WMF-657 which is located North of the proposed Fire Water Riser House location.	Resolved. Delivered in the CD-3a package.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	33	CDR, pg 3-21, § 3.2.3	33. How will the gravel be compacted in the area of the probes? Please discuss the measures of compaction that will be required (for example, 95% of the modified proctor) for the compaction of the gravel? Please specify the gradation of the gravel to be placed under the WES support structure? (GG)	Specific details regarding **gravel compaction, measures of compaction, and gradation** will be provided in Title Design. The project approach envisioned at present is as follows: The compaction will be 90% of maximum dry density around the probes in accordance with AASHTO T99. The gravel will be pit run from the Borax Pit which has 95-100% pass the 2-in sieve and 43% pass the #4 sieve and 5-8% pass the #200 sieve. The material compacts very well with proper moisture.	Resolved. Delivered in the CD-3a package.
EPA	1/23/02 Pierre to Dirkmaat LTR	34	CDR, pg 3-26, § 3.4.1	34. The 90% RD/RAWP should include all necessary backup information and/or calculations regarding the structural loading and weights of the equipment for the FFS to ensure proper structural design. The author(s) should specifically review concentrated loadings, including the impact loading, that may occur under the wheels of the forklift with a fully loaded drum or soil sack. Is the composite deck (3" metal deck + 3/16" plate) adequate to support the scale, exhaust stack and any other equipment. How will the composite deck be attached? (through puddle welds or screws?) Is the metal deck providing adequate support for the 5' span under the tension loading condition when the forklift passes over the span between the supports? What is the deflection of the metal composite deck? If the deflection under forklift loading is excessive, there may be a "waviness" in the floor when the fully loaded forklifts drive along. The International Building Code, IBC 2000, which is the industry standard for structural design loading and is cited in the DOE-ID AES, states in Table 1607.1 that for light manufacturing the minir	**Structural design** will be developed during Title Design.	Resolved. Final design drawings were submitted (i.e., in the CD-3a and -3b packages). EDFs documenting design details and calculations are not included in the agreed to scope of documents to be submitted to the Agencies.
EPA	1/23/02 Pierre to Dirkmaat LTR	35	CDR, pg 3-26, § 3.4.1	35. Please address in the 90% design the potential of the Facility Floor Structure for uplift and overturning forces created by wind and seismic loads from the WES. (GG)	The Title Design of the FFS will include **wind loads** from the **WES** and seismic loads from the **RCS**. **Seismic loads** from the **WES** are likely to be small in comparison to the wind loads.	Resolved. Final design drawings were submitted (i.e., in the CD-3a and -3b packages). EDFs documenting design details and calculations are not included in the agreed to scope of documents to be submitted to the Agencies.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	36	CDR, pg 3-28, § 3.4.4	36. Will the WES structure is designed for negative pressure (suction) in addition to the PC 2 wind loading. It is not clear in the documentation that this load combination has or will be addressed. Please include the fabric on the exterior of the structure in the 90% structural design of the WES (including the suction created within the WES). (GG)	**Negative pressure** if applicable will be included in the specification requirements for the WES.	Resolved. The negative pressure is very small in comparison to the wind loads, so it did not need to be specified.
EPA	1/23/02 Pierre to Dirkmaat LTR	37	CDR, pg 3-28, § 3.4.4	37. Please indicate in the specification that the design for the WES will be **approved (signed and sealed) by a licensed professional engineer** in the State of Idaho. (GG)	This requirement is included in the draft Performance Specification that will be used to procure the WES.	Resolved. Concur with comment and have complied with it. A licensed professional engineer has or will sign and seal the design.
EPA	1/23/02 Pierre to Dirkmaat LTR	38	CDR, pg 3-29, § 3.4.5	38. The design information for the ancillary structures is omitted from the submission and will need to be included in the 90% RD/RAWP. Also required will be ventilation, heating, air conditioning, plumbing and fire protection requirements for these buildings and code references for the design conditions. (DR)	Details regarding **ancillary structures and associated utilities** will be developed during Title Design.	Resolved. All ancillary structures that were within scope as of the AFC sign-off date, are included with in the AFC package.
EPA	1/23/02 Pierre to Dirkmaat LTR	39	CDR, pg 3-30, § 3.5.1	39. As the excavator will be an off-the-shelf backhoe, what safety limits on the hydraulic arm range of motion will be set to avoid breaching containment? Also, as the exhaust is discharged outside of the WES, will outside air be supplied to the engine, or will it draw from within the WES? If it draws from within the WES, this external discharge should be analyzed and balanced in the HVAC design. Also, carbon monoxide detectors may be warranted to ensure that the integrity of the exhaust discharge is maintained. (JM)	For three of the four end effectors, physical stops or lack of arm reach prevents the hydraulic arm from breaching the containment. The hydraulic hammer with a 5 ft tube sampler attached could breach the north and south wall. Care will be exercised when using this tool. The backhoe will use air from within the WES, however if any CAMS alarm the backhoe will be shut off immediately so no contamination will be drawn into it. CO detectors in the area of the backhoe will be considered. The **excavator exhaust** will be included in the air balancing for the Title Design.	Resolved. New info: 1) Portable CO meters will be used to monitor for potential CO inside the WES. The portable CO meters offer the flexibility to perform area monitoring, perform personnel monitoring, and can be used to pinpoint a source of CO. Using the portable meters to perform area monitoring allows the IH to sample various areas and position the meters as necessary to obtain data over the entire workspace area of concern. 2) The excavator exhaust has been included in considerations of air balancing (see drawing 522712).

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	40	CDR, pg 3-35, § 3.5.1	40.The mitigation of fumes generated by the excavator is noted. Details for wall thimble, stack support and vibrational details for the connection to the excavator is required in the 90% RD/RAWP. Also a list of equipment operating within the WES that will produce fumes should be included. Further, please provide wall or roof thimbles with flexible fume exhaust reels or piping to eliminate these fumes, if present. (DR)	Excavator exhaust details will be developed during Title Design. No other combustion engine equipment will be located inside the WES.	Resolved. Requested details are shown in Drawing 522719. There is now a pump in the WES, so the flexible fune exhaust reel or piping has been incorporated. Also shown in 522719.
EPA	1/23/02 Pierre to Dirkmaat LTR	41	CDR, pg 3-35, § 3.5.1	41. Excavator, forklifts, and other equipment may generate excessive quantities of heat and have minimum airflow requirements to operate correctly. Documentation and analysis of this equipment to ensure proper operation of equipment without affecting the operators and other personnel within the WES, will be required in the 90% RD/RAWP. Typical design considerations for including heavy equipment within a structure may require a remote condensing unit for heat rejection from radiators. (DR)	Heating and cooling loads will be developed during Title Design.	Resolved. Loads were calculated and documented in an EDF.
EPA	1/23/02 Pierre to Dirkmaat LTR	42	CDR, pg 3-38, § 3.5.3	42. The procedure for rotating the cart is unclear. Please explain how will the cart be rotated atop its mounting table if the drums are loaded with their major axis perpendicular to the gloveboxes. Will the bucket of the excavator be used for this purpose? Will the cart be equipped with a turning mechanism? Will the cart have a mechanism to prevent the cart from coming off the track? What procedures will be followed when the cart is accidentally bumped by the excavator or becomes stuck? (GG)	Cart rotation has been eliminated, per Agency agreement in the Feb. 28, 2002 weekly conference call. This will be reflected in Title Design.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	43	CDR, pg 3-39, § 3.5.5	43. Recognizing that the concept consists of three identical gloveboxes and this concept provides certain advantages, how has this been balanced against using or tailoring certain glovebox lines for specialized operations, and/or receiving defined classes of wastes? (JM)	Early on in the project, specialized gloveboxes were discussed and ruled out as not being the most efficient way to process the waste. The design objective is to make the single design flexible enough to handle any of the waste types.	Resolved by original response.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	44	CDR, pg 3-42, § 3.5.5	44. Glovebox Hoist. Are the proposed Glovebox framing members designed to be able to withstand the load from the 1 ton hoist (including impact)? (GG)	Yes, the **framing members** are being designed to be able to withstand the load from the 1 ton hoist (including impact).	Resolved by original response. Clarification: Although the hoist is rated for 1 ton, the maximum credible load is 1000 lbs. The glovebox framing members have been designed to support 1000 lbs - not 1 ton.
EPA	1/23/02 Pierre to Dirkmaat LTR	45	CDR, pg 3-43, § 3.5.5	45. ** Please provide additional design information for air relief for the RCS. The HEPA intake at each Glovebox will only address 5 percent of the design airflow. It is not evident from the text or the appendices that each intake into the RCS includes a HEPA filtration design. (DR)	All **RCS air inlets** are HEPA filtered as shown on the drawings (HV-1 and HV-2).	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	46	CDR, pg 3-46, § 3.5.6	46. ** Waste sorting and inspection singles out, "visually unidentifiable combustible material" for special treatment. That is, it cannot go into a waste bag-out drum without fissile monitoring. **Other noncombustible waste forms exist that can have significant fissile content, and historical data does not exclude their presence in Pit 9**. Relying on a visual determination to select a class of material for fissile monitoring presents a risk to the operation and a risk of a drum overload. Using an appropriate RadCon survey instrument to **hand survey** the waste entering the process, or an installed in-situ monitor that "observes" the loaded cart can avoid this concern. These measurements would aid the operator to ensure that all suspect material goes to the fissile well monitor prior to drum loading. (JM)	The current plan is to categorize waste into two groups: waste that does not need to be assayed prior to placement into a drum, and waste that does need to be assayed prior to placement into a drum. Based upon the historical inventory data associated with the expected waste matrices contained in the dig area and results from assaying of drums currently in storage, the soils and sludge material will not require assaying prior to loading into a drum. Other materials, such as HEPA filters, HEPA filter media, and non-identifiable combustible materials that are indistinguishable from HEPA filter media will be assayed prior to placement into a waste drum. Further development of **engineering data to support conclusions** as to which wastes need to be assayed prior to the placement of the waste material into a waste drum will be completed **prior to the issuance of the Final Documented Safety Analysis (FDSA)**.	We have chosen not to use hand surveys to trigger fissile monitoring, as EPA suggested, since it is not required by Criticality. Rod Peatross recently (6/17/02) added MgO to the list of materials to be fissile monitored.
EPA	1/23/02 Pierre to Dirkmaat LTR	47	CDR, pg 3-48, § 3.5.6	47. Figure 3-35 depicts a worker handling waste material. Glove box operations that process and size metal scrap (and operations where glove penetration concerns exist) will need to address worker protection in operations (special glovebox gloves, leather over-gloves, special tooling, etc.). (JM)	Nevada Test Site (NTS) has had good performance from leather over-gloves in similar applications. The project will consider using leather over-gloves.	Resolved by original response.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	48	CDR, pg 3-49, § 3.6	48. Additional design information for balancing and controlling the airflow for each intake into the WES and RCS, will be required at the 90% RD. The report indicates a minimum of 12 air changes per hour in the Glovebox, with only 6-10 air changes per hour in the RCS minimum. (DR)	Air changes listed in the CDR are correct, and airflows will be designed accordingly. A **testing, adjusting, and balancing procedure for construction and for operation of the facility** will be developed during Title Design. Control dampers will be set manually, with no automatic airflow control except fan speed for pressure control and opening of a pressure relief damper.	Procedures are being developed for operation of the ventilation system. Initial conditions will be established during the test phase. Procedures are not part of the RD submittal, but outlines will be included in the O&M Plan, which is part of the submittal.
EPA	1/23/02 Pierre to Dirkmaat LTR	49	CDR, pg 3-49, § 3.6	49. ** The ventilation dampers outlined in the preliminary design are counterbalanced and assumed to be of standard construction. On a relief condition, these dampers may have unacceptable leakage rates. The performance of the dampers should be reviewed.(DR)	The backdraft dampers in this application are only to provide additional resistance to help achieve the desired differential pressure from the WES to outside. The backdraft function is only to eliminate large quantities of air from being forced into the WES by wind. Standard construction dampers designed for the expected wind and pressures are acceptable.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	50	CDR, pg 3-49, § 3.6	50. The ventilation rate outlined in the preliminary design is listed at 1 cfm per square foot and based on the architectural drawings of 110 ft. by 80 ft for the WES, the minimum airflow is to be 8800 CFM, with a 20 percent contingency, this increases to 10,560 CFM. The airflow quantities listed in the documents are incorrect based on this information. (DR)	Because the RCS and associated access rooms are physically separated from the WES and are ventilated at different, much higher flow rates, the floor area of the rooms is subtracted from the floor area of the WES. Each area within the WES is actually ventilated at a rate at or above 1 cfm/sf.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	51	CDR, pg 3-49, § 3.6	51. ** The pressure differential for the different zones is listed in this section as well as the requirement for 125 FPM across any breaching. The man doors and overhead doors listed on the architectural drawings will require more airflow than what the fan is capable of providing for ventilation, if the doors are considered a breach in the containment envelope. The fan may not have the capacity with the variable frequency drive to maintain the pressure requirements and the airflow requirements. (DR)	The ventilation system is theoretically capable of providing adequate ventilation for a breach up to 54 sq. ft. Personnel doors are only 21 sq. ft. Opening larger doors will not be allowed without additional administrative protection (i.e., verification that RCS is not contaminated for removal of overburden, or contamination control tents and barriers if RCS is contaminated). **Where administrative protection is in place, opening of doors is not considered a design basis breach.**	Procedures are being developed which will prohibit opening these doors while the RCS is contaminated unless a tent is installed. Doors will be locked. Procedures are not part of the RD submittal, but outlines will be included in the O&M Plan, which is part of the submittal.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	52	CDR, pg 3-49, § 3.6	52. The pressure differential for the WES versus the atmosphere may induce additional loading on the WES framing. There is a need to coordinate pressure loading from the ventilation system with the structural designer and documentation of this coordination and analysis will be needed in the 90% RD/RAWP. (DR)	The differential pressure loading will be evaluated by the structural designer during the Title Design. However, this load is very minor compared to the snow and wind loads required.	Resolved. It has been evaluated by the structural designer. Negative pressure loads found to be insignificant. Documented in an EDF.
EPA	1/23/02 Pierre to Dirkmaat LTR	53	CDR, pg 3-54, § 3.6.2	53. Localized ventilation may be needed in the RCS to counter certain airborne situations should they arise. Portable recirculation filter systems exist that could provide capture and help balance flows within the RCS around sensitive areas. The portable recirculation filter system would discharge within the RCS and not impact the "house" HVAC system. (JM)	This suggestion will be considered during Title Design.	Resolved. Localized ventillation is not needed. Dust suppression and once-through, HEPA-filtered ventillation system is adequate.
EPA	1/23/02 Pierre to Dirkmaat LTR	54	CDR, pg 3-66, § 3.8.2	54. The CAS audio alarm (and remote alarm "speakers") should be distinctive from CAM alarms and capable of being heard above all ambient and machine noise, both inside and external to the WES. Likewise, the visual signals should be distinctive and widely distributed (strobe lights, etc.). (JM)	The CAS design will comply with applicable INEEL procedures.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	55	CDR, pg 3-67, § 3.8.3	55. It is stated that glovebox operators place suspect visually unidentifiable combustible material into the FMM well. Considering that a criticality alarm system is a component of the design, using only visual information to sort for disposal and to select suspect material for fissile monitoring is contrary to nuclear criticality safety practices. The glovebox operator needs to have information relating to potential fissile content of all material entering the process. This can be accomplished by using an appropriate RadCon survey instrument to hand survey the waste entering the process, or an installed in-situ monitor that "observes" the loaded transfer cart. (JM)	Please see response to comment #46.	We have chosen not to use hand surveys to trigger fissile monitoring, as EPA suggested, since it is not required by Criticality.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	56	CDR, pg 3-69, § 3.8.4	56. ** The CCTV monitoring images from each of the three cameras should be recorded (e.g., VCR) for future use in developing plans for future retrievals at the SDA and for addressing characterization issues concerning fate and transport issues. Suggestion: We recognize the resource concern with security clearance of tapes, however, properly cleared agency personnel are available to screen tapes to minimize the need for future security declassification.	Current design has added recording capability for one of the RCS cameras which will focus on the excavation area.	Resolved. The video feed from the camera that is being used by the excavator operator will be recorded. The other camera feeds are not recorded since they may not even be focused on the section of excavation area where digging is underway. See drawing number 522781.
EPA	1/23/02 Pierre to Dirkmaat LTR	57	CDR, pg 3-71, § 3.9	57. Will the RCS and the FFS be cut up for burial? How will the contaminated pieces be handled? How will the trench excavation shield be extracted and decontaminated? Will the trench shield be grouted in place? Please provide a disposal plan for the steel FFS, RCS, PGS and WES. (GG)	The disposition strategy for the FFS, WES, PGS, and RCS has yet to be finalized. A DD&D plan will be prepared, which will define the approach to decontamination and disposition of the project facilities.	The project is providing the Facility Shutdown and DD&D Preplan (PLN-343) to the Agencies as a part of the RD submittal. This plan answers all of the posed questions.
EPA	1/23/02 Pierre to Dirkmaat LTR	58	CDR, pg 3-71, § 3.9	58. Add a bullet, "list of potentially reusable structures and equipment."	A DD&D plan will be prepared, which will define the approach to decontamination and disposition of the project facilities and equipment.	Resolved. The Facility Shutdown and DD&D Preplan (PLN-343) is included in the RD submittal.
EPA	1/23/02 Pierre to Dirkmaat LTR	59	CDR, pg 4-1, Table 4-1	59. What type of estimating program was used to generate the cost estimate (e.g., parametric)? What is the basis for the listed confidences?	The SuccessTM estimating program was used to develop and format the estimate to a level of detail consistent with the preliminary baseline information. A combination of several estimating techniques, as outlined in the INEEL Cost Estimating Guide, DOE/ID 10473, were used to satisfy the estimating requirements of DOE Order 413.3. The project team identified possible risks to the project. A sampling of and concurrence by the project team members established the possible effects of the identified risks on the project cost. These data were then input into the @RISKTM software package to calculate and apply the appropriate contingency to the estimate elements using a Monte Carlo simulation technique and triangular distribution. Varying levels of confidence can be documented using this program.	Resolved by original response.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	60	CDR, pg 5-1, § 5	60. ** As data generated from Stage II will serve to support the Stage III design and/or OU 7-13/14 feasibility study evaluations, a remedial action report is required and needs to be included as a deliverable in the schedule.	A schedule will be developed for the RA Report.	Resolved. RA report has been added to schedule, in 2004. A proposed outline is included in the RD submittal to initiate discussions as to the report's content and structure.
EPA	1/23/02 Pierre to Dirkmaat LTR	61	CDR, pg 6-2, § 6.2	61. Identification of mitigating features in the event of discovery of an fissile material highly overloaded drum should also be addressed both pre and post glovebox, to insure the continued operation of the project if such an event was discovered.	Discovering a concentration of fissile material sufficient to overload a drum (pre or post package) is not an anticipated event. If discovered before packaging (through fissile monitoring of suspect filter media), the strategy is to subdivide the material, re-monitor until each unit piece is below thresholds, and then package into separate containers. After packaging, an overloaded drum will be identified by drum assay. Special handling procedures for an overloaded drum will be defined by the USQ process if encountered.	Resolved. Documented in EDF-2492 that is included in the RD submittal.
EPA	1/23/02 Pierre to Dirkmaat LTR	62	CDR App B, pg B-7, Tbls B1 & B2	62. In the B-1 and B-2 tables, page numbering skipped some even numbers?	The backs of the long pages do not have numbers typed on them - they were intentionally left blank, but were not so indicated on the pages, thus causing confusion.	Resolved. Addressed in the Excavation Plan and Sequential Process Narrative document (INEEL/EXT-02-00703), which will be submitted after the RD submittal, in October.
EPA	1/23/02 Pierre to Dirkmaat LTR	63	CDR App B, pg B-7, Tbl B1	63. ** Table B-1 presents the data objectives for the OU 7-10 Glovebox Excavator Method Project. All samples collected from the waste zone should be analyzed by gamma spectroscopy (a fast and sensitive NDA method). This analysis can provide measurements of the principal TRU nuclides, and can be used to support the drum assay methodology., , QW3 analytical method for weight of container is not correct., , Sampling method column states that "a statistical number of grab samples will be collected and composited from the transfer cartloads, for 80 percent confidence". This statement is confusing. Eighty percent confidence relative to what? The Sampling and Analysis Plan must clearly define the sampling methods and statistical procedures to accomplish a defined accuracy at a stated confidence level (considering the waste "granularity"). (JM)	(1.) Sample analysis will be addressed in the Sampling and Analysis Plan (2.) Agreed, the analytical method listed is not correct. (3) The sampling method will be defined in the Field Sampling Plan. Also, see response to comment #19.	Resolved. Covered in SAP/FSP.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	64	CDR App B, pg B-7, Tbl B1, QW1	64. The **Measurement and Sampling Method** columns indicate that reactive cyanide will be identified through visual inspection and biased samples will be collected where concentrated cyanides are suspected. This should be clarified that only disposed product would be observed.	This will be explained in the RD Submittal.	Resolved. Covered in SAP/FSP.
EPA	1/23/02 Pierre to Dirkmaat LTR	65	CDR App B, pg B-21, Tbl B2, QS-12	65. The objective of this DQO is to characterize the underburden. At what depth(s) will samples be collected in the underburden and will the extent of contamination be determined through collecting samples until clean soil is encountered? (AP)	The sampling method will be defined in the Field Sampling Plan.	Resolved. Covered in SAP/FSP.
EPA	1/23/02 Pierre to Dirkmaat LTR	66	CDR App B, pg B-35, Tbl B2	66. ** Sampling Method Column. This column states the type of samples that will be collected (composite); however, it does not include how this type was determined. Also, this column indicates that the number of samples that will be collected for characterizing waste zone material will be statistically based, but again does not provide specifics. The assumption(s) made about the waste (i.e. homogeneity), and the information already known about the waste is required to support the type and number of samples to be collected. (AP)	The sampling method will be defined in the Field Sampling Plan.	Resolved. Covered in SAP/FSP.
EPA	1/23/02 Pierre to Dirkmaat LTR	67	CDR App C, Dwgs A-6, A-7 & S-1	67. Please discuss the wall type for the Personnel Monitoring, Personnel Access and Transfer Vestibule rooms. These walls are stated in the documentation as being manufactured by Permacon. How are these walls attached to the WES? Do they need to be attached to the WES? Should there be additional structural members under the Personnel Monitoring, Personnel Access and Transfer Vestibule walls similar to the RCS in order to provide structural support of the walls? (GG)	Details regarding the **wall types, material, and construction** will be developed during Title Design.	Resolved. Covered in AFC package.
EPA	1/23/02 Pierre to Dirkmaat LTR	68	CDR App C, Dwgs. A-7 & S-1	68. Do the scale and charge station need any additional foundation support steel. There is no additional support steel shown on the drawings under these two pieces of equipment. (GG)	These stations should not require any **additional steel framing**. Final design details will be developed during Title Design.	Resolved. They did not require additional support. Final design drawings were submitted (i.e., in the CD-3a and -3b packages).

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	69	CDR App C, Dwgs. A-7 & S-1	69. Please show additional support steel under PGS 2. Are the legs of PGS 2 to fall on the steel floor beams? There is no additional support steel shown on the drawing for PGS 2 as is shown for the other PGS 1 and 3. (GG)	Support will be provided for the PGS as required by the analysis. Final design details will be developed during Title Design.	Resolved. Final design drawings were submitted (i.e., in the CD-3a and -3b packages). Drawings show the additional support steel.
EPA	1/23/02 Pierre to Dirkmaat LTR	70	CDR App C, Dwg. A-7	70. Please discuss how the walls of the Personnel Monitoring, Personnel Access and Transfer Vestibule rooms will be supported at the top of the wall? Is the roof structure rigid enough to support the walls? (GG)	The rooms will be constructed from self supporting panels designed for applicable loads.	Resolved. Shop drawings were not submitted with the CD-3a and -3b, but the original response should have answered the first question. The answer to the second question is yes, the roof structure is rigid enough to support the walls, per S. Jensen.
EPA	1/23/02 Pierre to Dirkmaat LTR	71	CDR App C, Dwg. S-1	71. How will the trench box (excavation shield) be installed? According to the text, the excavator is to remove the overburden and place it in the 4'x4' soil bags after the WES and RCS are constructed. This means that the Facility Floor Structure will have been previously installed? Will the trench box be installed incrementally as the excavation progresses? (GG)	The trench box will be installed as part of the facility floor structure and will be in place prior to the removal of the overburden. The plan is to erect the trench box off of the pit, excavate a trench to accommodate the trench box and move the trench box into place with a crane.	Resolved. Trench box is already successfully installed.
EPA	1/23/02 Pierre to Dirkmaat LTR	72	CDR App C, Dwg S-1	72. How will the Facility Floor Structure be constructed? Will the FFS be partially assembled off site, brought in by truck and fully assembled? Will it be bolted together? Or welded? If welded, is welding permitted in this area? (GG)	The FFS will be assembled with bolted connections. No assembly is planned off site. Partial assembly of sections may be completed in the area adjacent to the pit and moved into position with a crane for final assembly.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	73	CDR App C, Dwg S-3	73. How will the PGS be attached to the FFS? (GG)	The design concept is to bolt the PGS support legs to the FFS.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	74	CDR App C, Dwg FP-1	74. Has the issue of the need for a flexible coupling at the Fire Riser Building for the pipes and conduits due to frost heave of the foundation of the building been addressed? (GG)	Piping construction details, components, and materials will be developed during Title Design.	Resolved. Covered in AFC Site Development package.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	75	CDR App C, HV-2	75. ** The HVAC equipment/air flow pattern plan shown in the drawing shows a major component (5324 CFM of a total 6860 CFM) of the RCS air flow entering at a single point on RCS wall near the excavator. Has the RCS air flow pattern been evaluated and is it consistent with the maximum capture of residual airborne contaminants? It appears that the lower corner of the RCS is receiving most of the capture flow. Such a situation can cause adverse conditions within the RCS (spread of contamination, contamination buildup in low flow regions, etc.). The distribution of input and exhaust vents needs to be carefully evaluated with respect to operations. Also, as noted earlier, the effect of venting the excavator exhaust outside the WES must be balanced. (JM)	The 5324 cfm **inlet air grille will be relocated "upstream"** of the backhoe, either next to or from within the full drum staging/buffer area. The airflow pattern will provide a general sweep of air from north to south through the RCS, with the "cleanest" air being on the west side of the RCS along the operator windows. However, "maximum capture of residual airborne contaminants" is not a major driving parameter for the ventilation system. It is more desirable to leave the contaminants in the RCS rather than to pull them into the filter system. The facility is designed with a dust suppression system which will more effectively provide "capture of residual airborne contaminants." **Excavator exhaust** will be added to the airflow balance.	Resolved. Covered in AFC package and HVAC EDF.
EPA	1/23/02 Pierre to Dirkmaat LTR	76	CDR App C, Dwg HV-1	76. The heating configuration and quantity is providing a temperature rise of 40-45 degrees F over the entire facility. The introduction of ventilation at below freezing, however, may produce areas within the WES below freezing. The 90% should include a re-check of the heating design to ensure equipment and components do not experience freezing temperatures. The review should include requirements at overhead doors to prevent freezing of equipment and components in the vicinity of the doors. (DR)	The **heating criteria** for the 90% design has been changed to provide comfort heating to at least 50 degrees F at outside air temperatures as low as -45 degrees F. **Additional electric resistance unit heaters** will be added to account for the increased heating load.	Resolved. The values were changed, per the original response, and were re-checked and documented in the HVAC EDF. The heaters were added.
EPA	1/23/02 Pierre to Dirkmaat LTR	77	CDR App C, Dwg HV-2	77. The fan configuration on the drawing is in conflict with the airflow diagram and the design manual. The design approach is to maintain ventilation with no downtime. The backup fan design would require a parallel ductwork configuration with isolation dampers or manual slide gates for the facility operators to energize and divert airflow on a fan failure. (DR)	The Title Design will include **full parallel ductwork and appropriate isolation for maintenance of either fan while the other is in operation**.	Resolved. Full parallel ductwork is included in the AFC design drawings.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	78	CDR App C, Dwg HV-2	78. Suggestion: Please review the proposed filter design for the fan system. The moisture separator is documented to be located downstream of the 30 percent pleated and the secondary filters. The **moisture removal** may be more efficient if the separator is located prior to the 30 percent filters. This recommendation may require additional cleaning of the separator, but the filter media will be more effective and have a longer functional life.(DR)	This suggestion will be considered during Title Design, with expected filter loading vs. expected moisture loading being evaluated. A point of interest: A typical moisture separator is essentially a metal mesh pre-filter. We may be able to combine the functions into one physical location.	Resolved. Reviewed the filter design and evaluations indicate that there will be no moisture droplets in the air. The moisture filter was left downstream.
EPA	1/23/02 Pierre to Dirkmaat LTR	79	CDR App C, Dwg HV-2	79. The filter system is designed for filter replacement while the fan is in operation. The negative pressure in the filter housing is excessive and may make filter replacement difficult. A parallel arrangement may be more effective. (DR)	The filter housing consists of three banks of three filters. Each bank is in parallel with the others, with full isolation capability for each bank. This allows for isolation and changeout of 3 filters while the other 6 are in operation.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	80	CDR App C, Dwg HV-2	80. The filter system is designed for filter replacement outside the RCS. The filter media will be contaminated with elements from the RCS. Will the media replacement procedure introduce contaminants into the WES? (DR)	The **filter housing** will be a bag-in/bag-out type housing, with complete isolation of contaminated filters from the WES.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	81	CDR App C, Dwg HV-2	81. The present design may short circuit the ventilation through the RCS. (DR) Suggestion: It is recommended that the inlet air grilles be located to assist in the dust mitigation by moving airflow from north to south across the face of the excavator.	Each **inlet air location will be balanced** to prevent short circuiting. In addition, the 5324 cfm **inlet grille will be deleted** and a **new inlet grille will be located "upstream"** of the backhoe, either near or from inside the full drum staging/buffer area.	Resolved. Inlet air was balanced and the inlet grille was move upstream of the backhoe. Reflected in the AFC drawings.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	82	CDR App D, pg D-11	82. The waste retrieval and packaging operation is presented in the process logic diagrams. Suggestion: The process of sampling in the glovebox presents a number of operational issues that cost time and potential quality. Sampling materials and containers must be introduced to the glovebox, and the containers decontaminated and removed from the containment. With a potential for greater than 500 samples, this introduces a complexity that could be avoided through a small design change. Consideration should be given to designing into the glovebox a sampling port where the sample container remains outside the principal glovebox work environment. A number of alternatives exist to accomplish this objective. (JM)	The design will employ an alpha can (or "French" can) type transfer port for sample removal to remove the concern for contamination spread. The sample would be removed in a separate confinement so that the exterior of the can remains clean. The interior will always be considered contaminated. The time required for sample removal is significantly reduced with this concept.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	83	CDR App D, pg D-17	83. The laboratory analysis and sample handling logic is presented. Prior to opening the sample bottle and obtaining subsamples, the sample should be subjected to NDA gamma spectroscopy analysis for radionuclides (Pu, Am, and others). This information is important for a complete characterization of the radioactive waste sample. Understanding the distribution of the principal radionuclides between various samples and sample types, and at a much greater sensitivity that can be achieved through drum assay, provides valuable characterization information on the waste zone materials. (JM)	Sampling and analysis will be addressed in the Sampling and Analysis Plan. Also, see response to comment # 19.	Resolved. Covered in SAP/FSP.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	84	Section 2.2, App A, pg 2-2	84. The assumptions regarding characterization are limited to analyses directed at safe storage and AMWTF acceptance. Since a considerable amount cost is involved with satisfying these two objectives, which do not directly relate to environmental data or DQOs (in the true sense of the DQO process), some effort needs to be directed at environmental data pertinent to understanding the environmental dynamics of the waste zone retrieval. The principal objective of the glovebox excavator method project is to demonstrate retrieval. Although the revised retrieval operation will involve considerably more mixing of the waste zone (interstitial soil and waste), this should not be a reason for not characterizing interstitial soil (soil material represents 2/3 the volume of material in pits and trenches). (JM).	Characterizing interstitial soil is not a defined project objective. Characterization only needs to take place to support waste zone material disposition. Additional characterization will lengthen the schedule and increase costs.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	85	TFR, pg 1, § 1	85. ** Should add a bullet stating, "Provide a check against the disposal location information data base."	This is not an agreed objective of the demonstration retrieval project, as defined in the October 1, 2001 report.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	86	TFR, pg 3, § 1.4	86. Suggestion: The term "transuranic" means all nuclides with atomic number greater than 92. The acronym TRU can be used to define a subset of the transuranic population (i.e., TRU waste). Therefore, remove the word "transuranic" from the definition, and let stand the term "TRU". (JM)	Will change the <u>definition of transuranic (TRU)</u> to read, "Those elements with an atomic number greater than that of uranium (i.e., atomic number greater than 92)." This is from DOE G 435.1-1 Chapter III, p III-2.	Resolved. The definition has been changed in Rev. 3 of the T&FR as noted in the response.
EPA	1/23/02 Pierre to Dirkmaat LTR	87	TFR, pg 11, § 3.1.2.1	87. Item 6 states that the project shall use methods and techniques to minimize the spread of contamination from waste zone material into the overburden and underburden material. Verification is stated as "analysis". Where in the DQOs are the analysis requirements defined to satisfy this objective? (JM) Suggestion: Unrelated to DQO's, it may also be best to separate the discussion of overburden from underburden as the excavation process does not appear to minimize the spread of contamination to the underburden.	The <u>verification method should be changed to "demonstration"</u> (demonstrated via implementation of the planned process/ techniques). The operation of removing the overburden shall be completed prior to penetrating the waste zone, thus preventing contamination by the waste zone material. Underburden will be left in place as the waste zone material is removed. Surface contamination of the underburden from the waste zone material will occur, however contamination below the surface should be minimized.	While this change was made in a preliminary version of Revision 3, a later decision by the Project Manager has removed the verification methods from the document. The planned system verification for this requirement will now be reflected in the Integrated Test and Acceptance/Turnover Plan. A new action will be entered into the Project Action Item Tracking System to ensure that the verification method for this requirement is "demonstration."

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
EPA	1/23/02 Pierre to Dirkmaat LTR	88	TFR, pg 12, § 3.1.2.3	88. Items 4 & 5 state that the project shall characterize waste zone material for disposition to AMWTF and sample underburden. The verification is indicated as "demonstration". It appears that "analysis" should be included in the verification statements. (JM)	"Analysis" will be added to the verification methods for 3.1.2.3-4 and 5.	While this change was made in a preliminary version of Revision 3, a later decision by the Project Manager has removed the verification methods from the document. The planned system verification for this requirement will now be reflected in the Integrated Test and Facility Acceptance/Turnover Plan. A new action will be entered into the Project Action Item Tracking System to ensure that the "analysis" verification method was added for this requirement."
EPA	1/23/02 Pierre to Dirkmaat LTR	89	TFR, pg 12, § 3.1.2.3	89. ** This section attempts to describe the technical and functional requirements for sampling and analysis. However, this section is less than a page in length and does not contain any detailed information as to how sampling and analysis will take place to meet project goals. This will need to be detailed in the 90% RD/RAWP. (AP)	Detailed information for sampling and analysis will be provided in the Field Sampling Plan.	Resolved. Covered in SAP/FSP.
EPA	1/23/02 Pierre to Dirkmaat LTR	90	TFR, pg 14, § 3.1.2.5	90. Suggestion: It should be noted that if a significant TRU content existed, (e.g., discovery of a 'hot spot'), the overburden would not be considered to be at a low risk-based concern level.	Statement noted. As discussed in Section 3.1.1 of the CDR, if material is encountered during overburden retrieval that exceeds operating thresholds, the condition is mitigated and the retrieval of overburden is continued in a neighboring area.	Resolved by original response.
EPA	1/23/02 Pierre to Dirkmaat LTR	91	TFR, pg 16, § 3.2.3	91. ** Item 2 states that the project shall ensure that drums are not overloaded relative to the fissile content of the final package. The basis statement indicates process knowledge (and visual inspection) will be used to select the waste streams for fissile monitoring. However, **it appears that process knowledge is based on an assumption that current SWEPP information on recently stored TRU wastes is applicable to Pit 9 wastes, ignoring available RFP assay data of pre-1970 wastes**. Also, if verification involves demonstration and analysis, "front-end" information on potential fissile content of material entering the process is required. A visually based "process knowledge" decision is not consistent with nuclear criticality safety practices. (JM)	The proposed visual inspection process has been approved by both DOE and INEEL Criticality Safety. **Operational plans** are being developed **to address the visual identification criteria** along with the further development of engineering data to support conclusions as to which wastes need to be assayed prior to the placement of the waste material into a waste drum.	We have chosen not to use hand surveys to trigger fissile monitoring, as EPA suggested, since it is not required by Criticality.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
IDEQ	1/24/02 Nygard to Dirkmaat LTR	92	General	1. A public address (PA) system should be installed in the RCS and WES. This inexpensive system would enhance general operations and significantly assist in casualty control efforts.	A PA system is not required. Communication within the facility will be consistent with INEEL requirements and provided via wireless devices.	Resolved by original response.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	93	General	2. Video recording of the waste excavation process must be considered. Information from these recordings would prove invaluable to future remediation efforts, and would significantly improve waste origination point determinations if desired. Video camera use for excavator operations is already included in the project design, therefore recording of the excavation would be an extremely minor expense relative to project cost. These recordings could be edited as needed to remove any inclusion of classified information.	Video recording of the excavation area has been added to the project scope.	Resolved. The video feed from the camera that is being used by the excavator operator will be recorded. The other camera feeds are not recorded since they may not even be focused on the section of excavation area where digging is underway. See drawing number 522781
IDEQ	1/24/02 Nygard to Dirkmaat LTR	94	General	3. Please add more detail to the project schedule.	The level of detail provided in the schedule contained in the CDR is considered to be sufficient. However, an updated version of this schedule, showing status and progress, can be provided to the agencies and discussed in the weekly conference calls. Questions and responses can be included in the weekly calls.	Resolved by original response.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	95	CDR, pg 3-5, Sec 3.1.1	4. "Overburden Removal Highlights", Bullet 2 indicates that the soil will be packaged in 4 x 4-ft soil sacks. Please revise this statement to read 4 x 4 x 4-ft sacks.	The anticipated design for soil sacks are 4 X 4 X 4 feet. As agreed in the December 18 and 19 DOE, EPA, IDEQ meeting, there are no plans to revise and re-issue the CDR. Rather, the project will proceed in accordance with agreed comment resolution. The design will be finalized during Title Design.	Resolved. Addressed in the Excavation Plan and Sequential Process Narrative document (INEEL/EXT-02-00703), which will be submitted after the RD submittal, in October.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	96	CDR, pg 3-7, Sec 3.1.2	5. The first paragraph after Figure 3-4 states "...discharges a fine water mist before to excavation". Please revise this to read "...discharges a fine water mist before excavation".	As agreed in the December 18 and 19 DOE, EPA, IDEQ meeting, there are no plans to revise and re-issue the CDR. Rather, the project will proceed in accordance with agreed comment resolution. The design will be finalized during Title Design.	Resolved. Addressed in the Excavation Plan and Sequential Process Narrative document (INEEL/EXT-02-00703), which will be submitted after the RD submittal, in October.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
IDEQ	1/24/02 Nygard to Dirkmaat LTR	97	CDR, pg 3-7, Sec 3.1.2	6. Bulleted item 2 states that outlier items will be bagged out of the PGS and possibly returned to the excavation pit. Consideration should be made to developing a process whereby such items con be placed back on the transfer cart and returned to the excavator bucket for direct return to the pit. Bagging out such items, then transferring them back into the RCS seems inefficient. Possible solutions include modifying the transfer cart to allow dumping items back into the excavator bucket, or perhaps the use of a simple metal slide to return materials to the pit directly.	Numerous methods of returning material to the pit are currently provided by the design, including bagging into the RCS through the sample port, passing in through the equipment or personnel access doors, bagging a 55 gal drum in through a drum port, or by lifing the object out of the transfer cart with the excavator. The proper method is dependent on the size and form of an object and would be described in special handling procedures written for disposition when an outlier is encountered.	Resolved by original response.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	98	CDR, pg 3-7, Sec 3.1.2 AND others	7. Bulleted item 3 states "Unidentifiable combustible material is segregated to verify fissile content prior to packaging." Items such as HEPA filters may well be identifiable, and are considered to potentially contain plutonium. Please revise this statement to read "Unidentifiable combustible material, and material suspected of containing fissile elements, is segregated to verify fissile content prior to packaging." This is a global comment, and applies to all such statements throughout this submittal (including Process Logic Diagrams).	See comment #46. An engineering basis will be used to determine the disposition of all waste matrices as to whether or not they need to be fissile monitored prior to placement into the waste package. This will be completed in the process of finalizing the Criticality Safety Evaluation (CSE) and the Documented Safety Analysis (DSA). Once this list is determined operational personnel will be trained regarding these operational parameters.	Resolved by original response.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	99	CDR, pg 3-11, Sec 3.1.3, Tbl 3-2	8. Redox potential testing to ascertain oxidizing or reducing conditions in the underburden would be beneficial to understanding the potential oxidation state and thus transport properties of actinide COCs. The probes that were to be installed in other areas of the SDA apparently could not fulfill this purpose. However, as normal redox testing would involve the placement of an in-situ probe, which will not occur in this underburden sampling, we encourage DOE to explore other known test methods to obtain redox potential on these ex-situ samples.	Determining redox potential is not in the current scope of the project.	Resolved by original response.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
IDEQ	1/24/02 Nygard to Dirkmaat LTR	100	CDR, pg 3-43, Sec 3.5.6	9. The first full sentence on this page states "The bottom half of the stub is placed in the drum, the drum lid is attached, and the drum is removed from the loading station." Please revise to include that the drum is verified free of contamination prior to removal from the loading station in this sentence.	As agreed in the December 18 and 19 DOE, EPA, IDEQ meeting, there are no plans to re-issue the CDR. Rather, the project will proceed in accordance with agreed comment resolution. The design will be finalized during Title Design. Normal Radcon procedures will require the drums to be verified free of contamination prior to removal.	Resolved. Addressed in the Excavation Plan and Sequential Process Narrative document (INEEL/EXT-02-00703), which will be submitted after the RD submittal, in October.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	101	CDR, pg 3-49, Sec 3.6.1	10. The second to last paragraph on this page raises the subject of high humidity during certain atmospheric conditions. High humidity is know to cause problems with HEPA filter operation and efficiency. What precautions have been implemented to preclude this condition?	Inlet air filters in the WES are not HEPA. **Air will be sufficiently heated** prior to entering the RCS HEPA inlet filters to prevent this condition.	Resolved by original response.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	102	CDR, pg 3-49, Sec 3.6.1	11. The second to last paragraph on this page states that no inlet air preheating will be included. In the event of winter operations, glove box (PGS) temperature will be entirely controlled by the temperature of the outside ambient air. Since manual dexterity is of paramount importance for material handling in the PGS, inlet air preheating should be utilized. It is worthy of note that personnel will be using resizing tools and handling potentially sharp edged metal debris in the PGS.	The **internal temperature requirements** have been changed for this reason. The new requirement is + 50 deg. F (inside) at -45 deg F (outside).	Resolved by original response.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	103	CDR, pg 3-50, Sec 3.6.1, Fig 3-36	12. Figure 3-36 indicates that the four RCS air inlets include HEPA filters. Please also indicate on this figure that the **RCS air outlet is also HEPA filtered**.	As agreed in the December 18 and 19 DOE, EPA, IDEQ meeting, there are no plans to re-issue the CDR. Rather, the project will proceed in accordance with agreed comment resolution. The design will be finalized during Title Design.	Resolved. Shown in Drawing 522719.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	104	CDR, pg 3-51, Sec 3.6.1	13. The first sentence on this page states that "The heat required for freeze protection is more than that required for comfort heating, thus, freeze protection is not provided by the heating system." It appears that the word "more" should be replaced by the word "less" in this sentence. Please clarify.	Comment is correct. However, as agreed in the December 18 and 19 DOE, EPA, IDEQ meeting, there are no plans to re-issue the CDR. Rather, the project will proceed in accordance with agreed comment resolution. The design will be finalized during Title Design.	Resolved by original response.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
IDEQ	1/24/02 Nygard to Dirkmaat LTR	105	CDR, App B, pg B-31, Tbl B-2	14. Data Quality Objectives, DQO Reference Number QW7: This DQO appears to have been deleted, but has not stated "Reason for Modification" given in this table. Please clarify.	The rationale for modification was inadvertently omitted in the Supplement Document. The rationale should read as follows: DELETE – For the Glovebox Excavation Method, interstitial soil, stained soils, and waste are considered together as waste zone material as described in The WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 4.3.1 and in Figure 4.3-2. Per Section 3.3, Stage II material is being characterized for safe storage and acceptance by AMWTF.	Resolved. by original response However, material is no longer being characterized for AMWTF acceptance.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	106	CDR, App B, pg B-37, Tbl B-2	15. Data Quality Objectives, DQO Reference Number QP3: This DQO appears to have been deleted, but has not stated "Reason for Modification" given in this table. Please clarify.	QP3 should appear with a revision to exclude detailed cost information to support Stage III (the revision rationale appears in red with strikeouts in App. B, pg.B-37.) Cost data to store retrieved materials pending disposition are required as per TFR 3.1.2.5-5.	TFR 3.1.2.5-5 has been deleted in Rev. 3 of the T&FR document. There will be no associated DQO as a result. The justification for deleting the requirement is that the parent requirement (i.e., App. A of the RD/RA SOW, Sect. 3.5) established a goal to maintain cost within the January 1995 ESD for Pit 9. The project has been rebaselined and this goal no longer applies.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	107	CDR, App C, sht C-2	16. Drawings, "Improved Enlarged Site Plan": This sheet includes the outline and call out label for the previous phase II design 20 x 20 foot excavation area. This information is not needed on this sheet. Please revise.	As agreed in the December 18 and 19 DOE, EPA, IDEQ meeting, there are no plans to re-issue the CDR. Rather, the project will proceed in accordance with agreed comment resolution. The 20 x 20 foot area was shown on the CDR to help project personnel and reviewers to know that the excavation is in the same general area as the previous plan. Showing the 20 x 20 foot area on the actual construction drawings or plot plans is not necessary.	Resolved by original response.
IDEQ	1/24/02 Nygard to Dirkmaat LTR	108	CDR, App C, sht A-8	17. Drawings, "Excavator Plan and Sections": The plan view on the right half of this sheet appears to be missing the "Alternate Position for Excavator", the "Excavator Arm and Bucket", and the "Equipment Change Area" depictions. Also, the Equipment Change Area call-out includes the word "Equipment" twice. Please revise.	As agreed in the December 18 and 19 DOE, EPA, IDEQ meeting, there are no plans to re-issue the CDR. Rather, the project will proceed in accordance with agreed comment resolution. The **drawings will be corrected** during Title Design.	Resolved. Drawings have been updated, per closure of project action items 474 and 475.

OU 7-10 GLOVEBOX EXCAVATOR PROJECT - REVIEW OF RESPONSES TO AGENCY COMMENTS ON CDR

Re-viewer	Ref.	#	Doc & Page	Comment	Original Response March 18, 2002	Updated Response September 11, 2002
IDEQ	1/24/02 Nygard to Dirkmaat LTR	109	CDR, App C, sht P-2	18. Drawings, "Dust Suppression System Isometric": The fog nozzle placement appears to interfere with excavator bucket operation during the phase where the bucket dumps waste into the PGS cart. If so, please modify the design. Also, consideration for utilizing a device for preventing damage to the nozzles from inadvertent contact with the excavator bucket should be addressed. Options include a simple metal bracket/bar devise in close proximity to the nozzles.	Interference checks will be performed during Title Design.	Resolved. Interference checks were performed, and the AFC design has no interference.

3. CD-3a Submittal

Sections 3.1 through 3.4 provide information and documents related to the CD-3a submittal. Documents provided herein include:

- DOE letter authorizing the project to proceed with the CD-3a work scope
- List of the CD-3a documents submitted to the Agencies
- Information copy of the comment resolution sheets from the Agency review of the CD-3a submittal.
- Revisions for SPC-355, *Performance Specification: OU 7-10 Glovebox Excavator Fissile Material Monitor*, and SPC-360, *OU 7-10 Glovebox Excavator Method Project Design input for Fissile material Monitoring System (FMMS)* are being resubmitted because of a significant change (i.e., correction of the system designation from quality level [QL]-3 to QL-4). Pending resolutions to Agency comments have also been incorporated into these revisions.

3.1 DOE Authorization for CD-3a

United States Government

memorandum

Department of Energy

Idaho Operations Office

RECEIVED APR 18 2002 M.B. PRATT

Mike PRATT

Date: April 18, 2002

Subject: Approval of Critical Decision (CD-3a), Early procurement and site utilities work for OU 7-10 Glovebox Excavator Method (GEM) Project located at the Radioactive Waste Management Complex (RWMC) at the Idaho National Engineering and Environmental Laboratory (INEEL) (EM-INTEC-02-021)

To: Warren E. Bergholz, Jr., Acting Manager

Through: Jerry Lyle, Assistant Manager, Environmental Management
Kathleen Hain, Director, Environmental Restoration Program

From: Peter J. Dirkmaat,
Project Manager, OU 7-10 GEM Project

Issue:

Detailed design of the GEM project has advanced to a point that supports early procurement of some facility equipment and installation of site utilities. This stage, termed CD-3a, will proceed to the acquisition phase for the following items: earthwork including temporary access ramps and roads; utility tie-ins including electrical and firewater; the Retrieval Confinement Structure (RCS) and the Packaging Glovebox Fissile Monitoring System.

The estimated value for this phase is $1.42M. ESAAB approval of phase 3a, will allow site preparations and installation of utilities during the summer 2002 construction season.

Background:

The OU 7-10 GEM Project will demonstrate safe retrieval of transuranic waste from a specified and preselected area of OU 7-10 (Pit-9) in the Subsurface Disposal Area.

CD-0 for this project was approved October 2001, and reaffirmed by ID Acting Manager on February 11, 2002. CD-1, approve baseline range and begin detailed design, was approved by the ID Acting Manager February 13, 2002. The mission need for this project has not changed and will further be substantiated by the Pit-9 settlement agreement now being finalized between EPA, the State of Idaho, and DOE.

Because the proposed early procurements include one safety significant system, i.e., the Retrieval Confinement System, a programmatic safety review board was convened to review the contractor's Preliminary Documented Safety Analysis (PDSA). This review, conducted by federal staff over a five-week period, concluded in their Safety Evaluation Report (SER) that the PDSA, as revised, was sufficient to proceed to final design and procurement. Additionally, DOE-ID's Independent Senior Safety Review Panel (SSRP) reviewed the SER and concluded that overall safety approach for the GEM project was adequate and that safety-related procurements of the safety-related items could proceed. The SSRP also provided comments to be resolved in the Final Documented Safety Analysis.

In compliance with DOE Order 413.3 requirements, a DOE-ID Independent Project Review (IPR) team was established to review the technical adequacy and readiness to proceed into procurement for the phase 3a items. The IPR report, dated April 4, recommended the GEM project proceed with CD-3a efforts. The IPR's Project Definition Rating Index of 849 (98% of the maximum available points) indicates sufficient maturity to proceed. The IPR did note that the Project Execution Plan, while being used as a working document was not yet specifically approved by DOE. The project plans to revise the Project Execution Plan prior to CD 2/3. There are no open project execution items or issues which pertain to the CD 3a scope of work. A formally chartered and approved Integrated Project Team (IPT) is also pending.

Minutes of the ESAAB meeting, held April 16, 2002, are attached to this memorandum.

A revised Environmental Checklist, RWMC-99-002 Revision 1, for this project was completed and issued since CD-1. A determination of categorical exclusion is promulgated in the checklist. A Storm Water Pollution Prevention Plan is required prior to any earthwork activities; this plan has been finalized and approved.

Sensitivity:

Settlement of the OU 7-10 dispute between DOE, EPA, and the State of Idaho, has not yet been achieved; however, the GEM project demonstration retrieval is expected to be a centerpiece of any settlement agreement.

Policy Impact: Beginning of GEM project construction work in the summer of 2002, will provide evidence to the regulator agencies that DOE is proceeding on OU 7-10 efforts in good faith.

Approve Warren E. Bergquist Date 4/18/02

Disapprove_____ Date_____

Attachment

3.2 CD-3a Table of Documents

OU 7-10 Glovebox Excavator Method Project
CD 3a Deliverables List

Site Preparation and Utilities Package

Specifications

SPC-352, Revision 0, Construction Specification Sections

Division 1 – General Requirements

01005 Summary of Work
01051 Construction Surveying and Staking
01300 Submittals

Division 2 – Site and Civil Engineering

02200 Earthwork
02486 Revegetation

Sheet S-2, Sections and Details

Sheet FP-1, Plot Plan

Sheet FP-2, Enlarged Plot Plan and Sections

Sheet FP-3, Sections and Details

Sheet E-1, One Line Diagram

Sheet E-2, Plot Plan

Sheet E-3, Enlarged Plan and Section at Pole 42-129-16

Sheet E-4, Enlarged Plan at SupporDivision 3 – Concrete

03300 Cast In Place Concrete
03400 Precast Concrete

Division 5 – Metals

05100 Structural Steel and Miscellaneous Metals

Division 9 – Painting

09900 Painting

Division 13 – Special Facilities

13505 Underground Fire Protection Piping
13911 Dry Pipe Fire Protection System
13914 Manual Deluge Systems (Fire Hydrant and Fixed Nozzle)

Division 16 – Electrical

16000 Electrical General Provisions
16110 Electrical Raceways
16120 Cable, Wire, Connectors and Miscellaneous Devices
16124 Insulated Medium Voltage Cable and Connectors
16360 Disconnect Switches 600 V and less

16450 Grounding
16603 Automatic Transfer Switch, Delayed Transition Type

SPC-361, Revision 0, Document Date, Procurement Specification for the OU 7-10 Glovebox Excavator Method Project Portable Generator and Trailer

Drawings

Sheet T-1, Site Map, Area Map and Drawing Index

Sheet C-1, Existing Site Contour Plan

Sheet C-2, Construction Access Road Plan

Sheet C-3, Site Grading and Drainage Plan

Sheet C-4, Plans, Sections and Details

Sheet C-5, Sections and Details

Sheet S-1, Sections and Detailst Area and Fire Riser Building

Sheet E-5, Grounding Plan and Enlarged Load Center Plan

Sheet E-6, Section, Details and Views

Sheet E-7, WMF-657 Floor Plan, Panel Schedule, Section and Elevation

Retrieval Confinement Structure (RCS) Package

SPC-358, Revision 0, A-E Performance Specification - OU 7-10 Glovebox Excavator Method Project - Retrieval Confinement Structure

Appendix A – Vendor Data Schedule

Form 431.14, Revision 0, Vendor Data Schedule

Appendix B – Drawings

DWG-519888, Sheet T-1, Site Map, Area Map and Drawing Index

DWG-519889, Sheet A-1, Floor Plan and Legends

DWG-519890, Sheet A-2, Elevations

DWG-519891, Sheet A-3, Views

DWG-519892, Sheet A-4, Views

DWG-519893, Sheet A-5, Views

DWG-519893, Sheet A-6, Roof Plan, Details and Legend

DWG-519895, Sheet A-7, Glove Box Connection Section and Details

Appendix C – Penetrations, Attachments, and Interfaces for RCS and Related Structures

Appendix D – Fire Protection Piping Layout Drawings (For Information Only)

Sheet FP-4, WES Lower Plan

Sheet FP-8, RCS Plan

Appendix E – Proposed Lighting Fixture Vendor Cut Sheets

Appendix F – Retrieval Confinement Structure Analysis and Loading Criteria

EDF-2053, Revision 0, Document Date, Retrieval Confinement Structure Analysis and Loading Criteria

Packaging Glovebox System Fissile Material Monitoring System

Specifications

SPC-355, Revision 0, March 15, 2002, Performance Specification: OU 7-10 Glovebox Excavator Fissile Material Monitor

SPC-360, Revision 0, OU 7-10 Glovebox Excavator Method Project Design Input for Fissile Material Monitoring System (FFMS)

Drawings

Fissile Material Monitoring Interface Drawings, 3 sheets

Equipment Plan and Enlarged Plan, 1 sheet

3.3 CD-3a Comment Resolution

June 18, 2002 CCN 33607

Mr. Jeffrey G. Snook
Project Manager
U.S. Department of Energy
Idaho Operations Office
850 Energy Drive, Mail Stop 1222
Idaho Falls, ID 83401-1563

CONTRACT NO. DE-AC07-99ID13727 - OPERABLE UNIT 7-10 GLOVEBOX EXCAVATOR METHOD PROJECT RESPONSE TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY AND IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY COMMENTS ON THE CRITICAL DECISION 3A DESIGN PACKAGE

References:
(a) W. Pierre letter to J. Snook, Formal Comments on Pit 9 CD 3a Package, May 9, 2002
(b) D. Nygard letter to J. Snook, WAG 7, OU 7-10 Glovebox Excavator Method Critical Decision 2/3 Document Review, May 9, 2002

Dear Mr. Snook:

Enclosed are the Bechtel BWXT Idaho, LLC responses to the U.S. Environmental Protection Agency and Idaho Department of Environmental Quality comments that were transmitted via References (a) and (b).

If you have any questions or comments, please contact Mike Pratt at 526-5565 or me at 526-3029.

Sincerely,

John M. Schaffer
Acting Manager of Projects, WAG 7
Environmental Restoration

JDB:mp

Enclosure

cc: (w/o Encl)
C. D. Cutler, MS 3810
R. J. Hoyles, DOE-ID, MS 1221
K. C. O'Neill, (w/ Encl), DOE-ID, MS 1222
S. G. Stiger, MS 3898

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7/10GEM-25-0075

bcc: (w/o Encl)
J. D. Bryan, MS 3765
J. A. Cole, MS 3920
S. A. Davies, MS 3920
T. M. Dicken, (w/ Encl), MS 3920
M. B. Pratt, MS 3950
ARDC Files, (w/ Encl), MS 3922
Correspondence Control, MS 3106
OU 7-10 Project File (w/ Encl)
J. M. Schaffer File
D. K. Jorgensen Letter File (DKJ-134-02)

Uniform File Code: 6400
Disposition Authority: ENV1-k-2-b
Retention Schedule: Cutoff at project completion. Destroy 25 years after project completion. EPI

NOTE: Original disposition authority, retention schedule, and Uniform Filing Code applied by the sender may not be appropriate for all recipients. Make adjustments as needed.

Enclosure to
CCN 33607

OU 7-10 Glovebox Excavator Method Project - Responses to Agency Comments on the CD-3a - Site Preparation and Utilities Package Draft

REVIEWER	REF	#	DOC	PAGE/ SEC/ PARA	COMMENT	RESPONSE
EPA	5/9/02 Pierre to Snook LTR	01	GEN	GEN	1. The waste processing gloveboxes are always open to the waste retrieval area (i.e. no isolation door); the direction of airflow provides a degree of isolation for the gloveboxes relative to the retrieval area (airflow through gloveboxes to retrieval area). However, the glovebox waste processing and packaging operations present a significant risk of contamination introduction into the retrieval area. The airflow leaving the gloveboxes is not filtered prior to entering the retrieval area. What is the basis for the current concept? Suggestion: It appears that it would be desirable to isolate the glovebox work area from the retrieval area considering that the potential for a significant airborne release exists within the gloveboxes. Some form of isolation door and filtered airflow from the gloveboxes would accomplish this objective. (JM)	The suggested provision is not necessary because the RCS confinement and ventilation systems are designed to handle contaminated air flows from the packaging glovebox systems.
EPA	5/9/02 Pierre to Snook LTR	02	GEN	GEN	2. Details of the fissile material monitoring system were provided in three documents (Performance Specification, Interface Drawings, and Specification). The Specification document (SPC-360) provided more detail and performance information compared to the Performance Specification (SPC-355). Suggestion: It appears desirable to combine these documents for the purposes of clarity and to eliminate conflicts. (JM)	These documents were generated by different organizations within BBWI and serve different purposes. SPC-355 and the interface drawings were created by the project team and provide the system functional and interface requirements. SPC-360 was created by the development team to describe, in greater detail, the plan for meeting the functional and interface requirements. SPC-360 summarizes the proposed system design as well as lower-tier design requirements. There is no reason to combine these documents since the work is being performed and coordinated internal to BBWI.
EPA	5/9/02 Pierre to Snook LTR	03	SPC-355	Sec 5.1.3 Pg 4	3. Is the stated cylindrical volume (12 in. diameter by 14 in. height) the available active volume within the specimen chamber (12 in. diameter by 16 in. height), or does one intend to have the detector "view" that TOTAL chamber volume? (JM)	The detector will be shielded to view a standardized 5-gallon container within the field of view of the detector.
EPA	5/9/02 Pierre to Snook LTR	04	SPC-355	Sec 5.1.8 Pg 4	4. Why are electrically operated coolers the preferred choice for cooling the detectors? (JM)	Electrical coolers were chosen because of operational concerns and prior problems associated with liquid nitrogen cooled detectors in an operations environment. Further, we have good experience with electrically cooled systems.
EPA	5/9/02 Pierre to Snook LTR	05	SPC-355	Sec 5.2.3 Pg 5	5. The performance specification should specify the principal/controlling isotopes for direct measurement (i.e. Pu-239 and Am-241). (JM)	The isotopes identified for analysis are specified in SPC-360 along with other radionuclides for which analyses are to be performed.
EPA	5/9/02 Pierre to Snook LTR	06	SPC-355	FMM Logic Flow Pg 10	6. The "calibrate" box terminology should be replaced with "background count". Calibration and the daily system performance check are separate processes, independent from the routine FMM analyses. Also, in footnotes "valves" equals values. (JM)	The once-per-shift process includes both a closed-collimator background and a performance check that address peak energy, peak area efficiency and resolution. These are automatically included in a control chart which, through Labview, is used to determine whether the system is operable

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REVIEWER	REF	#	DOC	PAGE/ SEC/ PARA	COMMENT	RESPONSE
						and calibrated. We agree, in future documents, the term "calibration" to describe this check process will be changed to another term (i.e., "performance"), and "valves" will be changed to "values." These changes will also be made in SPC-360 if the document is revised later in the FMM development process.
EPA	5/9/02 Pierre to Snook LTR	07	SPC-355	General	7. Is there a requirement for an acceptable level of movement during the testing process? Will vibration isolators be adequate? (GG)	Vibration isolation will be used for the detectors to minimize potential microphonic effects and to ensure proper equipment operation and testing.
EPA	5/9/02 Pierre to Snook LTR	08	SPC-355	General	8. Can the monitor be recalibrated if it is accidentally bumped during operation? (GG)	Yes, the monitors can be recalibrated if necessary. However, the monitors will be protected to prevent accidental disruptions during operation and these systems are quite stable so loss of calibration is not anticipated. The system software has a built-in diagnostic program that monitors system operability continuously and will notify the operator of problems with system performance.
EPA	5/9/02 Pierre to Snook LTR	09	SPC-360	Sec 1.4 Pg 4	10. Specimen Chamber description does not appear to be consistent with drawings. It is stated that the chamber is built into the bottom of the glovebox where waste will be placed to assay. This was a concept proposed in earlier documents; current drawings indicate a 5 gal. waste container will be shielded and placed on the glovebox floor surface near the glovebox window/detector location. Maintaining the analysis region free of contamination and free from general glovebox,"shine"(at quantitation significant interference levels) will be more difficult and labor-intensive compared to the original recessed chamber configuration. (JM)	The specimen chamber was moved from the recessed location to the bottom surface of the glovebox due to glove-box engineering issues with the recessed chamber. The new location will be adequately shielded from glovebox shine by the chamber walls. It will be easier to clean contamination from the glovebox floor surface than it would have been to clean a recessed well. This wording in SPC-360 will be clarified if the document is revised later in the FMM development process.
EPA	5/9/02 Pierre to Snook LTR	10	SPC-360	Sec 2.1 Pg 5	11. " Item 4 indicates that a process will be developed to utilize the summed 5 gal. measurements to provide assurance that 200 grams fissile material is not exceeded in a drum. One must remember that only suspect material is subjected to analysis, and the assessment of drum loading must consider the "unmeasured" fraction. (JM)	SWEPP assay data on over 3800 drums with similar waste types was statistically analyzed to help determine the amount of fissile material to assume in the "unmeasured" fraction of the waste. The "suspect" material will be measured and added to the unmeasured waste, but this process will be subjected to several administrative controls (under development) to assure that a drum will not be loaded with more than 200 g fissile content. If assay later indicat higher than 200 g fissile conte in a drum, the drum will be returned to the glovebox to examine and repackage its contents.
EPA	5/9/02	11	SPC-360	Sec 2.1	12. It is stated that "background measurements	We agree, and are

REVIEWER	REF	#	DOC	PAGE/ SEC/ PARA	COMMENT	RESPONSE
	Pierre to Snook LTR			Pg 6	will be preformed once each day or whenever a change is suspected". This requirement is not sufficient to guarantee that an accurate assessment of background exists for a particular measurement considering the sample location is contained within a waste processing/contaminated environment. The analytical protocol for the fissile monitor should involve continuous background monitoring when not counting a sample. This background history will be readily available for evaluation prior to a sample count. This is consistent with Sec 5.8.1 of the Performance Specification. (JM)	implementing a process where background contamination analysis will be performed continuously between measurements.
EPA	5/9/02 Pierre to Snook LTR	12	SPC-360	Sec 2.1 Pg 6	13. It is stated that for large, odd shape or high-density material, the specimen will be rotated 180 degrees and 2 counts taken. A 180-degree rotation does not provide sufficient averaging. Ninety-degree rotations would be better, but that involves more operator involvement. It is recommended that the sample be continuously rotated, or step-rotated through ninety-degree intervals; the load cell could be built into this simple assembly. Such a process would improve the quality of the data and simplify glovebox operations. (JM)	In the interests of system simplicity it was decided to not use continuous rotation. An initial analysis indicated that a single 180° rotation would provide acceptable data for the FMM. Acceptance limits for fissile content will be set to conservatively account for the increased uncertainties inherent in this method.
EPA	5/9/02 Pierre to Snook LTR	13	SPC-360	Sec 2.1 Pg 6	14. Table 1 lists the radionuclides to be measured directly by the system. It states that the measured result will be a value with an uncertainty OR an MDA. All measurements should involve a value with an uncertainty, AND a calculated MDA. Uranium 233 and Pu 241 are listed for direct measurement. Since the basis for the fissile monitor is a 1 g Pu 239 MDA, will the uranium 233 MDA be consistent with the Pu value? If this MDA is significantly greater, what is the purpose of the direct measurement? The Pu-241 can be inferred from the Pu-239 (gram quantity a small fraction of the Pu -239). Or is the intent to use Pu-241 as an internal check of the Pu-239 value? (JM)	Both MDA's and results with uncertainties are calculated and tabulated for all measurements. The MDA is used for a particular analysis to provide assurance that the detection limit is appropriate for a given background. -Pu-241 (148 keV) and U-233 would be expected to have high MDA's. -The FMM measurements will be performed to achieve an MDA of 1 g for Pu-239 and not other radionuclides. -Other measurements (e.g., Pu-241) are performed simply as a check to see if high levels are present. -For data analysis purposes, scaling factors will be used for most long-lived radionuclides that would not be easy to detect in relatively short count times.
EPA	5/9/02 Pierre to Snook LTR	14	SPC-360	Sec 3.1.1.3 Pg 9	15. An enclosure shall provide shielding for the 'specimen chamber' located in the glovebox, not the detector assembly. (JM)	The intent of this sentence is to explain that "An enclosure, located in the glovebox, shall provide shielding to limit background shine to the detector." This wording in SPC-360 will be clarified if the document is revised later in the FMM development process.
EPA	5/9/02 Pierre to Snook LTR	15	SPC-360	Sec 3.1.1.9 Pg 9	16. It is stated that at the beginning of the shift, the system is calibrated by a qualified operator using a 40 microcurie Eu-152 source. The operation performed by the qualified operator should be considered a system performance evaluation (i.e. not calibration) to check that the energy calibration and efficiency calibration are within a defined specification. The actual	The calibration measurements, using a Pu source, will occur just once, during the initial system calibration prior to any system operation. As you note, these systems are quite stable and loss of calibration is not anticipated.

REVIEWER	REF	#	DOC	PAGE/ SEC/ PARA	COMMENT	RESPONSE
					calibration of the system should involve Pu 239 and other key nuclides of interest. These systems are quite stable and daily calibrations are not required. Also, it is recommended that the system performance check involve placing an appropriate source (using controlled geometry) in front of the detector, but not in the specimen chamber. A 40 microcurie Eu-152 source presents handling problems within the glovebox environment (contamination of the source, operator exposure, etc.). (JM)	The Eu-152 measurement taken regularly during operation is a source check used as a system performance evaluation. We agree, in future documents, the term "calibration" to describe this check process will be changed to "performance," and will also be changed in SPC-360 if the document is revised later in the FMM development process. It was decided that the Eu source will be located outside the glove box and consequently a 10 microcurie source will be used. In addition to the performance check with the Eu source, the ORTEC-Digi-Dart system has a monitoring program that monitors system operability continuously and will notify the operator of problems with system operation.
EPA	5/9/02 Pierre to Snook LTR	16	SPC-360	Sec 3.1.1.9 10	17. The process of placing waste in "the identified container and then placing the container in the chamber" needs to be clarified. Does the waste go into a plastic bag, and then the plastic bag to a fixed geometry container located within the shield area at the end of the glovebox? Or is the material loaded into a fixed wall container that will be "wasted"? It helps to understand the sequence to ensure contamination control at the analysis location. (JM)	The proposed process is to use a reusable container that can be cleaned. The empty container will be placed in the specimen chamber for background measurements, and contamination of the container will be included in the background calculation to determine operability.
EPA	5/9/02 Pierre to Snook LTR	17	SPC-360	Sec 3.2.1 Pg 14	18. Not only is one concerned about contamination control for the detectors and electronic systems, but also of significant importance is contamination control for the specimen "chamber" and the internal surface of the glovebox window. (JM)	We agree, contamination of the specimen chamber and glovebox window is always a significant concern. This is addressed by the regular background measurements between scans to assure that the MDA for Pu-239 can be met. However, contamination of the detectors and electronic systems should not occur since they are located outside the glovebox.
EPA	5/9/02 Pierre to Snook LTR	18	SPC-360	Sec 3.2.5 Pg 14	19. For system performance evaluation, the check source should be used outside the glovebox and near the detector. One does not need a 40 microcurie Eu-152 source to accomplish the system performance objectives. Daily/regular use of a 25 mrem/hour at one-foot source presents exposure risks that can be eliminated by a different performance evaluation protocol. (JM)	The preferred location and strength of the Eu source has been evaluated, and we will plan on a 10 microcurie source located outside the glove box.
EPA	5/9/02 Pierre to Snook LTR	19	SPC-360	Sec 3.2.8 Pg 15	20. Why was electrical cooling chosen instead of liquid nitrogen? (JM)	Electrical coolers were chosen because of operational concerns and prior problems associated with liquid nitrogen cooled detectors in an operations environment. Further, we have good experience with electrically cooled systems.
EPA	5/9/02 Pierre to Snook	20	SPC-360	Sec 3.2.9.2 Pg 15	21. " It is stated that "the potential for high levels of background due to drummed waste or contamination of the specimen chamber is	We agree, in future documents, the term "calibration" to describe this check process will

REVIEWER	REF	#	DOC	PAGE/ SEC/ PARA	COMMENT	RESPONSE
	LTR				addressed during the calibration process". This situation is not addressed during the calibration process, but is part of the background measurement and evaluation process. (JM)	be changed to "performance," and will also be changed in SPC-360 if the document is revised later in the FMM development process.
IDEQ	5/9/02 Nygard to Snook LTR	21	SPC-355	Sec 5.6.1 Pg 6	1. Will there be an audible alarm in the immediate vicinity of the glovebox operator if the system fails or loses power?	In the event the FMM loses direct power, the uninterruptible power supply will provide an alarm. If the standby generator does not start within 4-5 minutes, the system will shut down and the startup procedure and check source process must be completed again before the FMM would be considered operable.
IDEQ	5/9/02 Nygard to Snook LTR	22	SPC-355	Sec 7.1.2, 7.1.3, & 8.2 Pg 7	2. Will the system be tested in place (installed in glovebox at GEM Project site) using fissile material? Section 8.2 states that calibration will be performed in the final installed configuration, but fissile material calibration per 7.1.2 will be done at TRA.	The current project plan does not include testing with fissile material at the project site. The fissile material testing at TRA is being performed as part of the calibration and Systems Operations (SO) test processes to define system operability. The glove box geometry will be mocked up at TRA for the fissile material measurements. SO test measurements with non-fissile material radioactive sources will later be done at the project site to verify system operability. Use of the plutonium sources at the project site would be difficult because of transportation and safeguards issues along with congestion in the area during the initial start up.
IDEQ	5/9/02 Nygard to Snook LTR	23	SPC-355	Sec 7.1.2, 7.1.3, & 8.2 Pg 7	3. The document does not specifically state that during calibration some type of material (Lexan?) will be placed between the fissile monitor and the fissile material, as will be the case when the monitor is actually installed in the GEM glovebox.	During the calibration process, a complete mockup of the glove box design including all barriers and the container used to hold the material being assayed will be used.
IDEQ	5/9/02 Nygard to Snook LTR	24	SPC-355	FMM Block Diagram Pg 9	4. This block diagram figure indicates that a wireless communication link will be used for linking the three fissile monitors to the FMM Host Computer. There is a potential for 2-way radios and cell phones to interfere with this wireless communication link.	The backup to the host computer is planned for once a day. In the event that communication is lost, the system will continue to attempt the backup until it is complete.
IDEQ	5/9/02 Nygard to Snook LTR	25	SPC-355	FMM Block Diagram Pg 9	5. This block diagram indicates that a load cell will be placed in the bottom of the fissile monitoring well. Does the glovebox operator have a local control to tare (zero out) the load cell at needed intervals?	The tare will be performed automatically when the empty container is located on the load cell prior to filling it with waste. A FMM measurement will also be performed to determine whether the waste container is contaminated above acceptable levels.
IDEQ	5/9/02 Nygard to Snook LTR	26	SPC-355	FMM Logic Flow Diagram Pg 10	6. The line between the "Is Signal Too High" and "Sub Divide Specimen" blocks appears to be missing the word "yes" above the connecting line as the logic delineator.	This modification will be made in any future use of this diagram, and will be changed in SPC-355 if the document is ever revised.
IDEQ	5/9/02 Nygard to Snook LTR	27	SPC-360	Pg 6:	7. The first bulleted item indicates that background radiation levels will be measured once per day. Given the sensitivity of this instrument, and the tendency for background	The current process is that a closed-collimator background measurement (with a shield in front of the detector) will be

REVIEWER	REF	#	DOC	PAGE/ SEC/ PARA	COMMENT	RESPONSE
	LTR				levels to change frequently, it would be prudent to check background levels continuously or prior to each measurement.	performed once per shift to assess the effects of potential contamination and radiation "shine" from areas not in front of the detector. Because of the low expected duty cycle for the FMM, continuous background measurements of the activity levels inside the glove box with the empty waste container in place will be performed between measurements (or groups of measurements) and when the glove box system is not in operation. This will provide an essentially continuous measure of the radiation background levels in the glove box. The results will be compared with an administrative control determined during the calibration process on acceptable background levels for performing measurements.
IDEQ	5/9/02 Nygard to Snook LTR	28	SPC-360	Pg 11	8. The line between the "Is Signal Too High" and "Sub Divide Specimen" blocks appears to be missing the word "yes" above the connecting line as the logic delineator.	This modification will be made in any future use of this diagram, and will be changed in SPC-360 if it is revised later in the FMM development process.
IDEQ	5/9/02 Nygard to Snook LTR	29	SPC-360	Sec 3.2.5 Pg 14	9. This paragraph discusses control of the radioactive source associated with the detector. Will this source require a locked space for secure storage?	The design includes secure storage and handling of the radioactive source as an inherent part of the FMM shielding at each glove box. To remove the source would require disassembly of the shielding, such that the source cannot be inadvertently removed from the area.
IDEQ	5/9/02 Nygard to Snook LTR	30	SPC-360	Sec 3.3.2 Pg 16	10. The last sentence states that the detectors will be electrically isolated and include "....shock mounting if significant vibration is expected.". It seems that shock mounting would be in order for this sensitive piece of equipment as a reasonable precaution. Unplanned events, such as inadvertent contact by the excavator during soil placement onto the transfer cart, could cause the instrument to lose calibration.	Shock mounting is planned.
IDEQ	5/9/02 Nygard to Snook LTR	31	SPC-352	Sec 02200 Pg 2 Line 25 - 27	11. This sentence states that backfill may contain rock and gravel up to 6 inches in the largest dimension. This material is inappropriate for backfill of trenches containing pipes, wire conduits, etc.	Details on Dwg. FP-1 (519878) require sand bedding around piping. Per section 02200 Page 2, lines 36 and 37, the sand bedding for pipe is as follows: "Sand bedding for pipe shall be - 3/8 inch material in the Satisfactory Soil Material Group." No change is considered necessary.
IDEQ	5/9/02 Nygard to Snook LTR	32	SPC-352	Pg 2 Line 25 - 27	of vegetation. This word should be replaced by the term "organic material" to ensure exclusion of sticks and other organic matter. This substitution should be made throughout these specifications where the term vegetation is used in this context.	Lines 25 - 27 use standard language from the DOE-ID Architectural Engineering Standards. For this specification, no change is considered necessary. The exclusion of organic matter should be sufficiently ensured by the use of the terms "debris", "waste", "vegetable", and "other

REVIEWER	REF	#	DOC	PAGE/ SEC/ PARA	COMMENT	RESPONSE
						deleterious matter" contained in the cited lines as well as by the statement on page 5 of 7, line 4, which requires that "All backfill or fill material shall be free from trash, organic matter and frozen particles."
IDEQ	5/9/02 Nygard to Snook LTR	33	SPC-352	Sec 02200 Pg 5 Line 31	13. This sentence states that compaction of backfill should be 90% of maximum dry density. It is not clear why this requirement is not the more standard/typical value of 95%. This comment is pertinent to all other instances of compaction requirements throughout these specifications.	90% compaction is sufficient for imposed loads while minimizing the potential for creating pit subsidences. No change to the specification is considered necessary.
IDEQ	5/9/02 Nygard to Snook LTR	34	SPC-352	Sec 02200 Pg 6 Line 18	14. This sentence states that upon completion of backfill operations, the Subcontractor shall grade and reshape these areas. Adding the verbiage "to conform to surrounding topography" to the end of this sentence is suggested.	No change is considered to be required. Grading will be accomplished in accordance with the Grading Plan. Areas of damage shall be repaired in accordance with other sections of the contract.
IDEQ	5/9/02 Nygard to Snook LTR	35	SPC-352	Sec 02200 Pg 6 Line 22 - 29	15. This paragraph discusses material placement on the geotextile. Adding the phrase "At no time is wheel or track propelled equipment to operate directly upon the geotextile" is suggested.	The specification requires the geotextile fabric to be installed per the manufacturer recommendations which would include any restrictions on traffic. The described method of placement (i.e., end-dumping of fill) should preclude traffic loads on the fabric. No change is considered necessary.
IDEQ	5/9/02 Nygard to Snook LTR	36	SPC-352	Sec 02200 Pg 7 Line 4	16. This sentence states that slopes are to be graded no steeper than 4:1. Replacing "4:1" with "4H:1V" is suggested.	This is standard terminology for these specifications. No change is considered to be required.
IDEQ	5/9/02 Nygard to Snook LTR	37	SPC-352	Sec 02486 Pg 1 Line 23	17. Adding "Grass seed mixture shall be free of noxious weeds or other deleterious material" is suggested.	This specification has been deleted from the package and will be handled under a separate package or work order. Will add a provision in this package or work order that states, "Grass seed mixture shall be free of noxious weeds or other deleterious material."
IDEQ	5/9/02 Nygard to Snook LTR	38	SPC-352	Sec 02486 Pg 3 Line 11	18. This sentence states that traffic over seeded areas is prohibited. It is unclear how mulch material is to be applied and anchored to the required depth of 2 inches. Perhaps this requirement should state that traffic over <u>mulched</u> areas is prohibited?	This specification has been deleted from the package and will be handled under a separate package or work order. The subcontractor will be advised that traffic over the mulched area is prohibited.
IDEQ	5/9/02 Nygard to Snook LTR	39	SPC-352	Sec 13505 Pg 7 Line 24 - 44	19. No mention is made regarding overpressure protection of the piping system during hydrostatic testing. The use of one automatic and one manual relief valve is advisable to preclude system damage during the hydro test. It is further suggested that the hydro pump be attended by an operator throughout the duration of the test. These recommendations apply to the hydrostatic testing of the dry pipe fire line hydro testing described in Specification 13991, and the manual deluge system hydro test described in Specification 13914.	No change is considered necessary since the system, as specified, is adequately protected. The hydro pump has a pressure relief valve that is set at 120% of the test pressure. The leaks are normally a drip or small stream of water. The hydro pump is usually shut off and removed from the piping when the pressure has been reached. Someone from the subcontractor and the witness from the contractor are normally present at all times when the piping is pumped up to the test pressure.

REVIEWER	REF	#	DOC	PAGE/ SEC/ PARA	COMMENT	RESPONSE
IDEQ	5/9/02 Nygard to Snook LTR	40	SPC-352	Sec 16450 Pg 73 Line 1 - 7	20. No mention is made regarding the maximum allowed electrical resistance for the grounding rods. Will these rods be tested to determine the resistance to ground?	Per specification section 16450 pg. 1, line 8-9, "Subcontractor shall provide and install grounding as shown on the drawings and as recommended by the NEC and the NESC". Per the NEC section 250.56, the maximum resistance is 25 ohms. Also, per the vendor data schedule #57 and 58, both test procedures and report are required for this resistance test.
EPA	5/9/02 Pierre to Snook LTR	41	SPC-352	Sec 01051 Pg 2 of 3 Line 18 & 19	22. What interval is the control of the WES building pad established? Is it the same "50-ft" as on the road? (GG)	Per drawings 519872 and 519874, the WES building pad control intervals are the corners of the pad. Additionally, per the specification section 01051 page 2, line 19, "longitudinally down the middle."
EPA	5/9/02 Pierre to Snook LTR	42	SPC-352	Sec 02200 Pg 6 of 7 Line 7 - 9, 11 - 12 & 39 - 40	23. Is the pit run gravel to be compacted in the Pit 9 area? This topic is not called out in the specification. However, there is a compaction requirement around the test probes. (GG)	Yes, specification section 02200, page 5 of 7, line 31 requires all "backfill or fill" material to be compacted to at least 90%.
EPA	5/9/02 Pierre to Snook LTR	43	SPC-352	Sec 13117 Pg 3 of 9 Line 35 & 36	24. Please state that the building is to be anchored at 2'-0" oc on all sides of the building. (GG)	Stated in specification section 13117, page 3, line 35 and 36.
EPA	5/9/02 Pierre to Snook LTR	44	SPC-352	Sec 13117 Pg 3 of 9 Line 2, 3 & 36	25. Since the Fire Riser building is smaller than the pad, please state that the building should be centered on the pad, if that is the intent of the drawings and specifications. (GG)	Centering of the fire riser building on the pad is not a design requirement. The subcontractor is required to submit for approval the building layout drawings at which time the building placement on the pad would be verified and approved.
EPA	5/9/02 Pierre to Snook LTR	45	SPC-352	DWG-519876 Sheet S-1	26. Please show locations of the lifting devises on the precast blocks. What is the construction of the lifting devices? Are they bent #4 reinforcing steel or a manufactured item? If the lifting devises are #4 reinforcing steel, what is the required embedment? Will the lifting devises be cut off after the blocks are set? If they are not cut off should the lifting devises be painted so they do not rust or deteriorate? (GG)	The general location is shown on the plans. The exact location, the type of lifting device, embedment, etc will be shown on the Subcontractors shop drawings. See lines 5-6 on page 03400-2 of spec. The devices will be painted.
EPA	5/9/02 Pierre to Snook LTR	46	SPC-352	DWG-519877 Sheet S-2	27. Please place additional reinforcing around the fire riser opening. (to minimize slab cracking at the corners of the 2'-0" square hole) (GG)	Diagonal #4 Bars will be placed on the fire riser opening.
EPA	5/9/02 Pierre to Snook LTR	47	SPC-352	General	28. There is no mention of the connection between the RCS and the FFS. Who is responsible for this connection? Since the RCS is a prefabricated unit, the Engineer of Record for the RCS will determine the final building reactions. These reactions should be transmitted to the designer of the FFS. What is the proposed connection method for connecting the RCS to the FFS? (GG)	The connection between the RCS and the FFS is confinement design and is the responsibility of the confinement supplier. This is specified in section 4.7 of the specification. The FFS was designed based on reaction loads determined from a preliminary analysis the RCS structure. During the vendor data process, when these loads are transmitted to the FFS designer, the load magnitudes will be verified. The proposed connection method for connecting the RCS to the FFS will not be fully known until

REVIEWER	REF	#	DOC	PAGE/ SEC/ PARA	COMMENT	RESPONSE
						the shop drawings are submitted. Communication by the project with both the RCS and FFS suppliers is taking place.
EPA	5/9/02 Pierre to Snook LTR	48	SPC-358	Sec 3 Pg 3 of 17	29. The RCS should be governed by the DOE-ID Architectural Engineering Standards. This is not stated in sec 3. (GG)	Rather than globally call out only the DOE-ID Architectural Engineering Standards, the applicable codes, standards, and other important design parameters are called out explicitly in this spec.
EPA	5/9/02 Pierre to Snook LTR	49	SPC-358	Sec 4.8 Pg 7 of 17	30. Please state the welder qualifications that are acceptable to the project. (GG)	Welder qualifications are to be per AWS D1.1 as specified in Section 6.3.1 and Section 7, Quality Assurance.
EPA	5/9/02 Pierre to Snook LTR	50	SPC-358	Sec 4.9 Pg 7 of 17	31. Please state acceptable welding methods for the project. (GG)	Welding procedures are to be per AWS D1.1 as specified in Section 6.3.1. The supplier's procedures will be reviewed by BBWI.
EPA	5/9/02 Pierre to Snook LTR	51	SPC-358	App B DWG A-1 & A-4	32. If the tolerance for the openings in the RCS for the gloveboxes is +/- 1", who will ensure that the gloveboxes and the RCS align? What provisions are there in place if they don't fit? (GG)	Since the RCS will be installed prior to installation of the PGSs, the PGS installation subcontractor will be responsible for correct positioning and matching of the gloveboxes. The +/- 1" tolerance is a generous erection tolerance and most likely the two will be easily made to align within this tolerance. No explicit provisions are currently made in the case the items do not align, other than the shimming provisions in the construction spec and the fact that there is some latitude as to where the glovebox legs may be positioned prior to glovebox placement.
EPA	5/9/02 Pierre to Snook LTR	52	SPC-358	Dwg A-6 Sec A	33. How will the seal angle be attached? Will the seal angle be attached in the shop or in the field? Which contract will do this? Who is responsible for the coordination? (GG)	The excavator seal angle will be attached to the RCS panels in the field by the RCS installer. The seal angle will be match drilled and bolted. Specific details will be included as an appendix to the RCS installation package. BBWI has responsibility for the coordination of this work.
EPA	5/9/02 Pierre to Snook LTR	53	SPC-358	Dwg A-7	34.Please specify the amount of threads past the nut be at least 1 ½ times the nut height. (In case for any reason the bolt would required to be double nutted) (GG)	Double nutting will not be required. Length and nut configuration shown is per American Glovebox Society recommendations.
EPA	5/9/02 Pierre to Snook LTR	54	SPC-358	App C Pg 2 Item 17 & 18	35. "Downward thrust of XXX psi operating force", is not stated. Please provide these values so that the bracing can be designed. (GG)	These forces would be applied to the FFS (the FFS that is within the RCS). This particular piece of information is not needed by the confinement supplier.
EPA	5/9/02 Pierre to Snook LTR	55	SPC-358	App C Item 53	36. Can the CO Monitor penetration also serve as air inlets for other monitors, e.g., OVA, HnU, etc?	No, the CO Monitor penetration cannot also serve as air inlets for other monitors, e.g., OVA, HnU, etc. Note that the CO monitors themselves will be on

REVIEWER	REF	#	DOC	PAGE/ SEC/ PARA	COMMENT	RESPONSE
						the inside of the RCS. The penetration will be for the electrical conduit to the monitor(s).
EPA	5/9/02 Pierre to Snook LTR	56	SPC-358	App F Pg 3 of 4	37. Under the Live Load sec, the provisions of Sec 5.5 Roof Loads are not addressed. Specifically, the 20 psf roof live load stated in Sec 5.5. (GG)	It is not explicitly stated but is referred to under the Live Load section. Typical construction loading is 20 psf. For the analysis this load was less than the maximum design pressure of 20.8 psf, thus was not needed to be considered separately.
IDEQ	5/9/02 Nygard to Snook LTR	57	GEN	GEN	21. Assumptions: Expected geometry's of fissile materials involved will not become critical up to the operational control limit of 200 g of fissile material per drum. It should be stated somewhere in the document that this corresponds to an activity of fissile material. Assay of radioactive materials via gamma spectrometry involves measurement of activity, not mass. Considerations are required for the calibration of gamma spectrometry system based upon collimator and specimen chamber. Since the specimen chamber is shielded to prevent radioactive shine from the interior of the glovebox from reaching the detector, sample self-attenuation, backscatter from the shielding, and build-up (as a result of the material and shielding surrounding specimen chamber) must be taken into account, especially at the expected gamma field (exposure rates) and considering the sensitivity of the high-purity germanium detector required for assaying transuranic material. This may or may not be an issue assuming transistor reset preamplifiers are used for high rate operation to compensate for pulse pile-up.	The correlation between activity and mass for the primary gamma rays from Pu-239 is well known along with those for other fissile material that might be present. This and the other factors identified above are addressed as part of the calibration and SO test process performed for the FMM to ensure that the calibrations are accurate with a well-defined uncertainty. The calibration and SO test processes will be defined in detail in reports that are being developed that address the detailed system design and calibration process Concerning the potential for high activity rates at the detector, the FMM incorporates an automatic rate monitor that will not allow the system to perform measurements if the sample activity exceeds a defined operational rate condition for the system.
IDEQ	5/9/02 Nygard to Snook LTR	58	GEN	GEN	22. System Functions: Feasibility of determining whether the fissile material content exceeds a defined MDA nominally based upon 1-g of Pu-239 (approximately 62 mCi Pu-239) is difficult at best. Different aspects must be taken into account including background and the sample size of 100 lbs in the specimen chamber affecting build up and sample self-attenuation which will make assay problematic. The MDA is a factor of detector response, sample size (which will influence attenuation and build up), conversion x-ray and gamma photon energy, and the physical properties (i.e., geometry) of the sample (primarily density or atomic number which influences build-up, attenuation, and potential backscatter or shine). Determining the quantity or concentration of fissile material will be extremely difficult from the direct assay or evaluation of Pu-239 in the sample. The photon yields and ranges of energies associated with Pu-239 are extremely difficult to measure using gamma spectrometry. The greatest abundant peak will be observed with a conversion x-ray at 13.6 keV (abundance: 4.4%) that will not be observable with a typical high-purity germanium detector. How will total quantity of fissile material present be determined? Or better yet, what type of detector efficiency calibration will be performed? Standard practices involve the development of reproducible, NIST-traceable standards in expected geometry's with	An extensive calibration and SO test program for the FMM is to be performed as part of the program plan for this project. This plan includes some modeling but primarily depends upon calibration measurements using NIST traceable sources for the physical geometries (including filter media to dirt) expected at Pit 9. The SO test program includes measurements with known amounts of Pu-239 at various locations in the waste container to verify that the calibration data are accurate and that the uncertainties are appropriate. The highest and primary gamma ray to be used for quantifying Pu-239 is the 413.7 keV gamma ray line along with several lower energy lines. Th system will be appropriately calibrated for the range of expected geometries and attenuation effects for these gamma rays and other radionuclides that may contribute to the fissile material

16-0537185 LMIT

REVIEWER	REF	#	.DOC	PAGE/ SEC/ PARA	COMMENT	RESPONSE
					the development of a corresponding empirical efficiency determination. Many vendors will provide a "Monte Carlo" calibration for a specific detector based upon detector characterization.	inventory.
IDEQ	5/9/02 Nygard to Snook LTR	59	GEN	GEN	23. Operator Control Interface: How frequently will an operator perform an energy, efficiency, and resolution verification? The phrase "at the beginning of each shift or as needed for verification" leaves quality assurance objectives unstated. Specific criteria are necessary to indicate when a background measurement should be taken. Radiation measurements are a stochastic process with relatively large amounts of uncertainty associated with the physical phenomena. This becomes more complicated due to many observable peaks in a background spectrum. Background measurements need to be energy, region of interest (ROI) specific based upon radionuclides expected in the samples and upon historical spectra. If a specimen is large, odd-shaped, or has a high density, location of possible "hot-spots" may be appropriate. The only way this can be done effectively is to take three measurements and triangulate the approximate position of any "hot-spots". Measurements made at 180-degrees from each other will not allow for this. A more appropriate method for rotating samples and re-measuring would be at 0-degrees, 90-degrees, and 180 degrees or at 0-degrees, 120-degrees, and 240-degrees.	The periodic performance check process is to be performed at the beginning and end of each shift unless waste retrieval is being performed on a 24 hours per day basis in which case it will be performed at the beginning of each shift. Energy calibration, efficiency, and resolution will be automatically checked for five primary gamma ray lines from the Eu-152 source that generally spans the range of activity expected at Pit 9. These data will be stored in control charts for each gamma ray line and parameter. The results will be compared with both the running average and the operational bounds for the system before measurements can be performed. All of these activities will be performed automatically by the system and the data stored on the host computer. In addition, the Digi-Dart system has continuous health monitoring software that assesses whether the system is working correctly. As noted previously, because of the expected low duty cycle for this system, measurements will be performed between measurements to assess possible changes in the background. These data for ROI's at important lines will be stored in control charts and the results compared with the running average and previously defined acceptable background levels. The 180 degree rotation is to be used to reduce uncertainties in the analysis and not to triangulate the position of potential "hot spots." The objective of the FMM is simply to quantify the activity and compare it with administrative limits that will provide assurance that the 200 g limit is not being exceeded. The administrative limits will be set to account for uncertainties inherent in specimen variability and possible source locations
IDEQ	5/9/02 Nygard to Snook LTR	60	GEN	GEN	24. Activity Measurement: Activity of large, odd-shaped, or highly dense samples will be determined by taking an average of multiple measurements and assuming a relatively homogeneous distribution of radionuclides in the sample. This is not adequately stated in the document for the assay of samples in the specimen chamber. ALARA would indicate the	The FMM will accommodate expected waste with expected radiation levels. Densities and radiation levels outside these expected values will be addressed by special handling procedures.

REVIEWER	REF	#	DOC	PAGE/ SEC/ PARA	COMMENT	RESPONSE
					appropriateness of using the measurement with the higher activity. This is not adequately stated in the document.	
IDEQ	5/9/02 Nygard to Snook LTR	61	GEN	GEN	25. Direct Measurements: Direct measurement of Pu-239, U-238, and U-233 is extremely difficult using gamma spectrometry unless activities are inferred from measurable quantities of parent and daughter radionuclides. These radionuclides emit relatively low-yield, low-energy x-ray photons masked by the Compton continuum attributable to background, fission products (e.g., Cs-137), and activation products (e.g., Co-60). Adequate shielding (radiation and electromagnetic field) will be provided for the gamma-ray detectors, data acquisition systems, and computers for consistent operation in a 5-mR/h field. Observation of low-energy conversion x-rays will be difficult to differentiate at this level of background. Gamma exposures at this rate may produce electronic interference resulting from soft-effects for the data acquisition systems and computers. Calibration using a 40-µCi Eu-152 source must be performed in a reproducible fashion including reproducible placement of the source, source matrix, and review of energy response, efficiency, and detector resolution. It is assumed that this is a coarse calibration or source response check to verify proper operation. Likely, this does not comprise a full, fine-tuned calibration or characterization of the detector.	Direct measurement of Pu-239 U-238 and other radionuclides expected in the Pit 9 waste is difficult; however, these measurements have been done on a regular basis with a high degree of accuracy. Although the yields are low in some cases (e.g., the 413.7 keV gamma ray line for Pu-239) they are sufficiently high to meet the MDA requirements for the FMM. The presence of possible fission products (e.g., Cs-137) and neutron activation products will also be monitored to assess their contributions to the background for the fissile material measurements. As noted previously, the Eu-152 source check will be performed to verify system operability by assessing the energy calibration, efficiency and resolution of the detector system.
IDEQ	5/9/02 Nygard to Snook LTR	62	GEN	GEN	26. Operational Overview: The power conditioners for the gamma-ray detectors, data acquisition systems, and computers should include an uninterrupted power supply (UPS) as well as conditioned power.	A UPS is included in the syste design although not specifically shown in the document. A UPS is provided for power conditioning and to provide power to bridge the gap between a power failure and operation of the standby diesel generators.
IDEQ	5/9/02 Nygard to Snook LTR	63	GEN	GEN	27. Sub-system and Major Components: Since transuranic radionuclides are being assayed, an extended range high-purity germanium gamma detector should be implemented. This should be a "N-type" crystal with a low Z (e.g., Be) window to accurately measure photons with energy less than 80-keV.	High purity germanium gamma ray detectors are being used for this system. Although "N" type detectors are less sensitive to neutron damage by about a factor of 20, "P" types detectors are being used because 1) high levels of fast neutron dose are not expected from the Pit 9 wastes to be processed,2) the processing time is short, 3) the "P" type detectors were considerably less expensive and 4) the "P" type detectors were available with a shorter delivery time needed to meet programmatic requirements. A Be window was not included in the design because the primary gamma rays to be measured are all greater than 100 keV. In fact, a cadmium shield will be used to reduce the response from the 59.5 keV gamma ray line from Am-241.