ALTERNATIVE REMEDIAL ACTION SUBCONTRACTING APPROACH STATEMENT OF WORK

06/28/96

DOE-1060-96
DOE-FN EPAS
800
REPORT

Department of Energy
Ohio Field Office
Fernald Area Office
P. O. Box 538705
Cincinnati, Ohio 45253-8705
(513) 648-3155

DOE-1060-96

June 28, 1996

Mr. James A. Saric, Remedial Project Director
U.S. Environmental Protection Agency
Region V - SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

ALTERNATIVE REMEDIAL ACTION SUBCONTRACTING APPROACH STATEMENT OF WORK

The purpose of this letter is to transmit the Alternative Remedial Action Subcontracting Approach (ARASA) Statement of Work for the Waste Pits Remedial Action Project (formerly Operable Unit 1 (OU1)). This enclosure (i.e., Section C and J) is being submitted for your review. Sections C and J will be combined with the commercial terms and conditions for a contract to form a Request for Proposal (RFP).

We are submitting this draft Statement of Work (SOW) to the U.S. Environmental Protection Agency (U.S. EPA) and Ohio Environmental Protection Agency (OEPA) in accordance with the Amendment to the Remedial Design Work Plan (RDWP). Although this document does not require formal approval, we are requesting your assistance in reviewing and commenting on the SOW to assure that vendor responses to it will be in conformance with regulatory requirements. The receipt of your comments by August 2, 1996, would facilitate the procurement process and allow us to incorporate your concerns into the final SOW which will be issued to vendors for bidding.

With this submittal, the draft SOW becomes available to the public. We are continuing to work on the commercial terms for the RFP, and we expect to have these completed in draft by July 17, 1996. Our plan is to submit the draft RFP to pre-qualified vendors, request them to comment upon the draft RFP, incorporate their comments, and issue the RFP to initiate the formal procurement process.

Recycled and Recyclable

A draft schedule for this project is presented in the SOW as guidance for potential bidders. It is important to note that the OU1 RAWP, to be submitted by October 22, 1996, will establish the framework for identifying enforceable dates for submittal of EPA deliverables.

If you have any questions, contact David Lojek at (513) 648-3127.

Sincerely,

for Johnny W. Reising
Fernald Remedial Action
Project Manager

FN:Hall

Enclosure: As Stated

cc w/enc:

R. L. Nace, EM-423/GTN
D. Lojek, DOE-FN
G. Jablonowski, USEPA-V, 5HRE-8J
R. Beaumier, TPSS/DERR, OEPA-Columbus
F. Bell, ATSDR
D. S. Ward, GeoTrans
R. Vandegrift, ODOH
S. McLellan, PRC
T. Hagen, FERMCO/65-2
J. Harmon, FERMCO/90
AR Coordinator/78

cc w/o enc:

C. Little, FERMCO/2

DRAFT

STATEMENT OF WORK (SECTION C)

AND

ATTACHMENTS (SECTION J)

FOR THE

ALTERNATIVE REMEDIAL ACTION SUBCONTRACTING APPROACH (ARASA)

REQUEST FOR PROPOSAL

Waste Pits Remedial Action Project (WPRAP)
Operable Unit One (OU1)

Fernald Environmental
FERMCO
Restoration Management Corporation

U.S. Department of Energy (DOE)
Fernald Environmental Management Project (FEMP)
Fernald Ohio

June 1996

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SECTION C

STATEMENT OF WORK

C.1 INTRODUCTION

This Statement of Work defines the requirements for the Project known as the Waste Pit Remedial Action Project (WPRAP), a.k.a. Operable Unit 1 (OU1), at the U.S. Department of Energy's (DOE) Fernald Environmental Management Project (FEMP).

C.1.1 LOCATION OF THE PROJECT

The FEMP is a 1,050 acre DOE-owned, contractor-operated federal facility, located in southwestern Ohio, about 18 miles northwest of the city of Cincinnati, Ohio (see Figure C.1-1), that produced high purity uranium metal products for the DOE and its predecessor agencies from 1952 to 1989. Operable Unit 1 is a 37.7 acre area located in the northwest quadrant of the FEMP site (see Figure C.1-2). Large quantities of liquid and solid wastes were generated by various chemical and metallurgical processing operations and these wastes were stored or disposed of in six waste pits and the Clearwell, or burned in the Burn Pit. These pits are located in a portion of the FEMP Waste Storage Area and are contained within the boundaries of Operable Unit 1. Paddy's Run, an intermittent tributary of the Great Miami River, runs along the west side of Fernald property between Operable Unit 1 and the site boundary.

More definitively, Operable Unit 1 consists of Waste Pits 1, 2, 3, 4, 5, and 6 which contain sludge, waste materials, debris, and water; the Burn Pit (used for disposal and burning of waste); the Clearwell (a settling basin for surface water runoff); miscellaneous structures and facilities such as berms, liners, concrete pads, underground piping, utilities, railroad tracks, fencing, and soil within the Operable Unit 1 boundary.

C.1.2 PROJECT APPROACH

On March 1, 1995, the U.S. Environmental Protection Agency (U.S. EPA) signed the Record of Decision (ROD) for Remedial Actions at Operable Unit 1. The selected remedy presented in the Operable Unit 1 ROD generally consists of the following activities: 1) Excavation of wastes from the pits (along with any residual contaminated soils from beneath the pits), 2) Preparation of the wastes (e.g., sorting, crushing, shredding), 3) Treatment by thermal drying (as necessary to remove free water and achieve optimum moisture content to meet the Waste Acceptance Criteria (WAC) of the disposal facility), 4) Blending to achieve a uniform product, and loadout into railcars (or boxes, as applicable), 5) Transportation from the FEMP, and 6) Off-site disposal at a Permitted Commercial Disposal Facility (PCDF), or DOE's Nevada Test Site, as necessary, due to radiological levels in the waste product. The project approach for implementing this remedy places the responsibility for performing the activities identified in items 1-4 on the subcontractor, with the Fernald Environmental Restoration Management Corporation (FERMCO) being responsible for items 5 and 6. The time frame which has been established for performance of these activities extends from about July 1998 to May 2005, with an anticipated contract award in May 1997.

Implementation of the specified remediation components, means that the subcontractor is responsible for the design of the remediation facilities, the construction of those facilities, facility testing, facility operations and maintenance, and the eventual decontamination and dismantlement of the facilities. In addition, implementation includes other activities, such as sampling and analysis needed to meet the conditions/criteria/ requirements of this Statement of Work (SOW). Specific roles and responsibilities are detailed in this SOW.

Implementation also involves the utilization by the subcontractor, of the Greater Cincinnati Building and Construction Trades Council (GCBCTC) and the Fernald Atomic Trades and Labor Council (FAT&LC) consistent with the existing labor agreements which FERMCO has with each of these organizations.

The subcontractor's work area is shown in Figure C.1-3. As shown on this figure, the subcontractor's work area is composed of two parts, the waste pit area itself, and the area wherein the subcontractor's remediation facility is to be located. Figure C.1-3 also identifies various other features in and around the subcontractor's work area, such as utility tie-in points, which are discussed in later portions of this SOW.

C.1.3 INTERACTIONS WITH OTHERS

There are numerous parties which have an interest in the remediation activities being performed at the FEMP. Some of these parties have a direct share in implementing the remediation of Operable Unit 1, while others have oversight responsibilities, and still others have a more indirect interest in the remediation. The following discussion provides some insight into the roles and responsibilities of these various interested parties.

DOE

As noted previously, the FEMP is owned by the DOE. Within the DOE, the Fernald Area Office (DOE-FN) is responsible for the day-to-day operations of the site. DOE-FN is a part of the Ohio Field Office (DOE-OH) and reports to DOE Headquarters (DOE-HQ). DOE-FN is the ultimate technical authority for ensuring that the remedial design (RD) and remedial action (RA) are performed in a manner that meets all project goals, standards, specifications, and requirements. DOE-FN involvement is essentially two-fold, with the DOE Operable Unit 1 Team Leader providing the overall programmatic direction for this project, and with daily field oversight being provided by the DOE-FN Facility Representative, who will independently monitor the performance of facility/project operations and management.

FERMCO

FERMCO is DOE's current prime-contractor for environmental remediation at the FEMP. Relative to the implementation of the selected remedy for Operable Unit 1, FERMCO is directly responsible for managing the waste shipment and disposal (including on-site rail activities). In addition, FERMCO is responsible for the oversight of the subcontractor's remediation activities under this SOW, so as to ensure that the overall project is implemented in accordance with the Operable Unit 1 Record of Decision. FERMCO is the only party authorized by this subcontract to give direction to the subcontractor.

FERMCO will also have some direct involvement in the activities identified as being the responsibility of the subcontractor. For example, FERMCO personnel (i.e., FAT&LC workforce and supervision) will be utilized by the subcontractor in the performance of its remediation

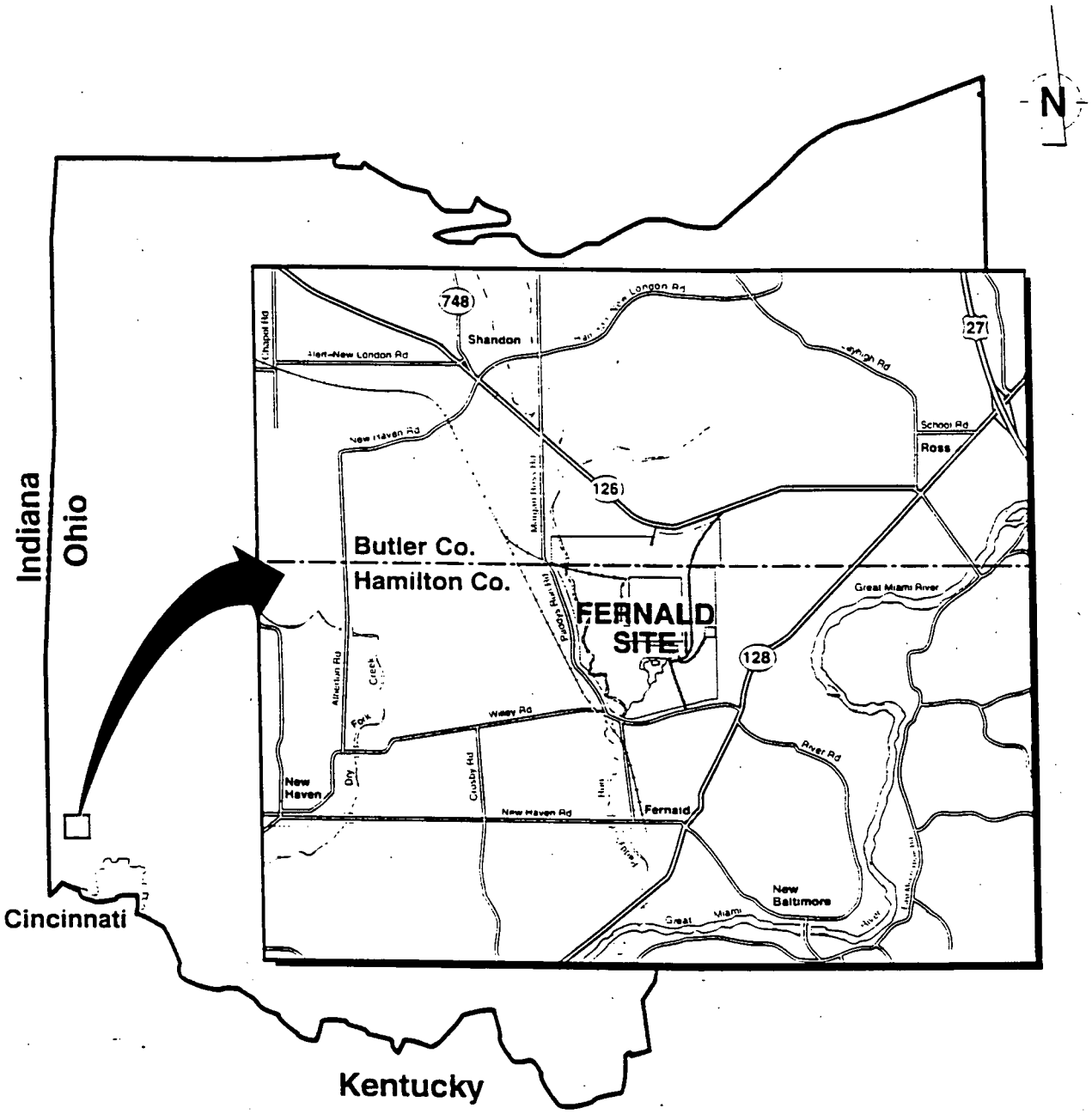
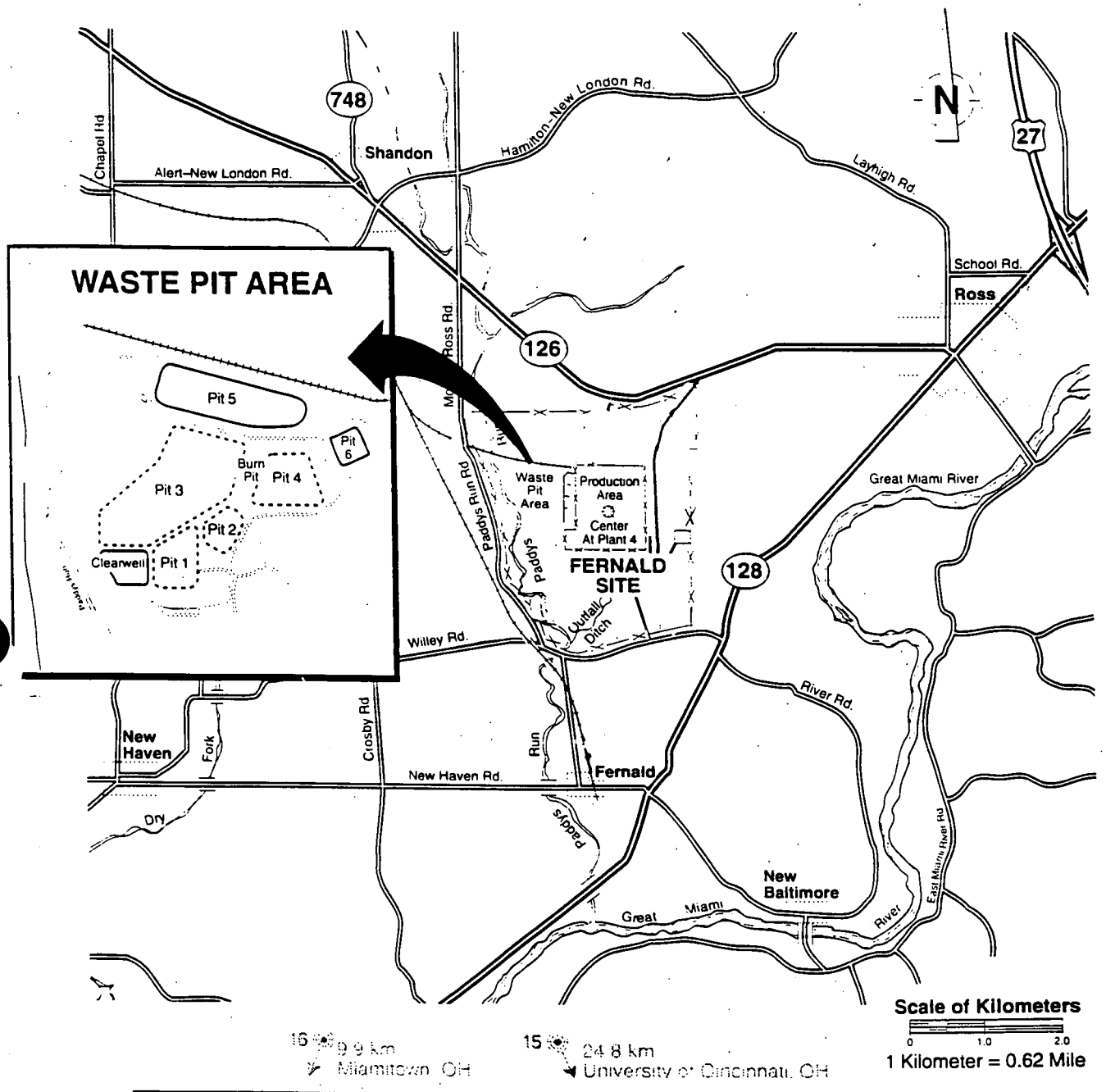


FIGURE C.1-1
FERNALD SITE AND VICINITY



LEGEND

Plant Perimeter

Production Area Perimeter

FIGURE C.1-2
WASTE PIT AREA AND FERNALD SITE

activities. FERMCO involvement will also include providing radiological protection coverage for the entire Operable Unit 1 remediation project, in accordance with this SOW.

GCBCTC

GCBCTC personnel will also be directly involved in the Operable Unit 1 remediation project. The subcontractor will be required to hire and utilize such personnel in accordance with the existing Project Labor Agreement which the GCBCTC has with FERMCO, as discussed in this SOW.

USEPA

The FEMP was included on the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) National Priority List in 1989. Remediation of the FEMP is therefore being conducted under CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. In particular, the remedial activities at the FEMP are being conducted under an Amended Consent Agreement (ACA) between the DOE and USEPA. Specifically, USEPA Region V in Chicago, IL has regulatory oversight and approval authority over various project activities and deliverables, as noted in this SOW.

Ohio EPA

In 1988, DOE entered into a Consent Decree with the State of Ohio that provided for the management of water pollution and hazardous wastes. This agreement was modified in 1993 by the Stipulated Amendment to the Consent Decree. The Ohio Environmental Protection Agency (Ohio EPA) is participating in the remediation process through direct involvement in information exchange meetings and technical review of project documents. Specifically, Ohio EPA's office of Federal Facilities Compliance has regulatory oversight and approval authority over various project activities and deliverables, as noted in this SOW.

Specific Ohio EPA involvement centers on their responsibility to manage Resource Conservation Recovery Act (RCRA) activities at the FEMP. Waste Pits 4 & 5 are designated as Hazardous Waste Management Units (HWMUs); therefore, Ohio EPA has a direct interest in their maintenance, remediation, and closure. In an effort to avoid duplication, mechanisms have been put in place to integrate the substantive Ohio EPA HWMU closure requirements into the remediation process required by CERCLA and the ACA. Specifically, an Ohio EPA Director's Final Findings & Orders (DF&O) was finalized in May 1996 wherein final closure of these HWMUs will be completed in conjunction with remedial actions under CERCLA. For the purposes of this SOW, therefore, the subcontractor is to assume that compliance with the CERCLA remediation process, as described herein, will also provide for compliance with necessary RCRA closure requirements.

Other Stakeholders

Other stakeholders involved with the site activities include the Fernald Residents for Environment, Safety and Health (FRESH) and the Fernald Citizens Task Force. These and other members of the public are kept involved in remediation activities, primarily through periodic written and verbal updates (e.g., quarterly meetings, roundtables, factsheets, etc.). In addition, key decision-making documents (including most RD and RA deliverables to the EPAs) are made available to the public for their inspection, at the time of submittal to the EPAs.

C.1.4 ORGANIZATION OF STATEMENT OF WORK

This Statement of Work is divided into the following eight sections:

Section C.1 Introduction - Includes a general discussion of various aspects of the Project, including the location and purpose of the project, key parties involved on the project, SOW organization, review of the SOW by the EPAs, establishment of enforceable milestones, and an introduction of activities performed to date in support of the remediation of Operable Unit 1.

Section C.2 Project Work Flow - Provides a flow diagram of the WPRAP Project from subcontract award to project closeout, along with a brief discussion of the flow diagram.

Section C.3 Scope of Work - Includes a general description of the work to be performed, as well as special project requirements, and a specific description of the work to be performed under this project.

Section C.4 General Project Requirements - Identifies general requirements for the project such as facilities, utilities, site location, limits of construction area, subcontractor deliveries, work hours, scheduling, submittals, meetings, and labor relations.

Section C.5 Pre-Operational Phase Technical Requirements - Identifies the technical requirements and deliverables associated with design, site preparation, construction, training, procedures development, pre-operational assessment, and start-up of the subcontractor's remediation facilities, as well as requirements relative to environmental control, and health and safety specific to these activities.

Section C.6 Operational Phase Technical Requirements - Identifies the technical requirements and deliverables associated with the operation and maintenance of the remediation facilities, as well as requirements relative to environmental controls, sampling and analysis, and shutdown.

Section C.7 Decontamination and Dismantlement Phase Technical Requirements - Identifies the technical requirements and deliverables associated with the decontamination and dismantlement of the subcontractor's remediation facilities.

Section C.8 Site Restoration Phase Technical Requirements - Identifies the technical requirements and deliverables associated with the subcontractor's restoration of the Operable Unit 1 remediation area.

C.1.5 STATEMENT OF WORK UNDER AGENCY REVIEW AND SUBJECT TO MODIFICATION

This SOW was submitted to the USEPA and Ohio EPA, for their information, on July 1, 1996. DOE/FERMCO has requested that the Agencies provide comments within 30 days, by July 31, 1996. Although the Agencies are not required to formally approve this SOW, DOE/FERMCO will provide comments received from the Agencies to potential bidders for incorporation into the proposal.

C.1.6 ENFORCEABLE REGULATORY MILESTONES

Through the submittal of various RD and RA documents to the EPAs, dates have been and will be established for document deliverables and other project milestones. Upon approval by the EPAs of these documents, the dates provided therein will become enforceable regulatory milestones under the ACA.

An Addendum to the Final Operable Unit 1 Remedial Design Work Plan (ARDWP) was submitted to EPA in March 1996, identifying the following project-related deliverables for submittal to the EPAs:

> Project SOW - As stated in Section C.1.5, this was submitted to the EPAs on July 1, 1996 for their information, with comments due by July 31, 1996.
>
> Design Deliverables - Items to be included are defined in this SOW. Specific submittal dates will be established at the time of award of this subcontract (currently anticipated for June 1997).

In accordance with the ARDWP, a Remedial Action Work Plan (RAWP) to be developed by FERMCO/DOE, will be submitted to the USEPA and Ohio EPA by October 22, 1996. The RAWP will identify RA deliverables to be developed by FERMCO and the subcontractor (as discussed throughout this SOW). The RAWP will also propose dates for the submittal by DOE of each of the FERMCO RA deliverables, and will provide a date (i.e., some time after award of this subcontract) when the subcontractor deliverable schedule will be provided by DOE to the EPAs. Upon award of this subcontract, specific dates will be established for the submittal of the subcontractor RA deliverables, reflective of the subcontract award date, the subcontractor's project schedule, and the deliverable review time frames established in Section C.4.7.5. The subcontractor's project schedule should in turn be based on the requirements established in the Deliverables/Submittals Requirements Form (Figure C.4.7-2). Once these dates have been established, DOE/FERMCO will submit the dates to USEPA and Ohio EPA; once the dates are approved by the Agencies, they will become enforceable regulatory milestones.

C.1.7 ACTIVITIES TO DATE

Numerous activities have been undertaken to date in support of the remediation of Operable Unit 1, including remedial investigations, studies, and design activities. Data gathered through these activities shall be used by the subcontractor to facilitate and determine the approach to be taken by the subcontractor in remediating Operable Unit 1. Attachment J.2 provides a

discussion of these various activities, including (but not limited to) discussions on the following:

- Location and physical features of the waste pits;
- Physical, chemical, and radiological characteristics of the waste pit materials;
- Presence of non-soil like materials, and pyrophoric materials in the waste pits;
- History of production at the FEMP, and associated disposal activities within Operable Unit 1;
- CERCLA remediation activities to date, including:
  - Remedial investigations;
  - Removal actions;
  - Feasibility study;
  - Treatability studies, including the Dewatering Excavation, Evaluation Program;
  - Record of Decision for Operable Unit 1;
  - Remedial design work, including studies/tests supporting design;
- Waste streams from other FEMP projects to be handled within the Operable Unit 1 remediation facility; and
- Site improvements undertaken in support of the Operable Unit 1 remediation activities/facilities.

SECTION C.2

WASTE PIT REMEDIAL ACTION PROJECT (WPRAP) ACTIVITIES FLOW DIAGRAM

The WPRAP Activities Flow Diagram (Figure C.2-1) depicts the subcontract Scope of Work. Flow diagram blocks are annotated with references to sections of the Statement of Work.

This flow diagram is an aid and does not take precedence over any other part of the subcontract, nor is it intended to depict all relevant references to the block activities.

WASTE PIT REMEDIAL ACTION PROJECT FLOW DIAGRAM

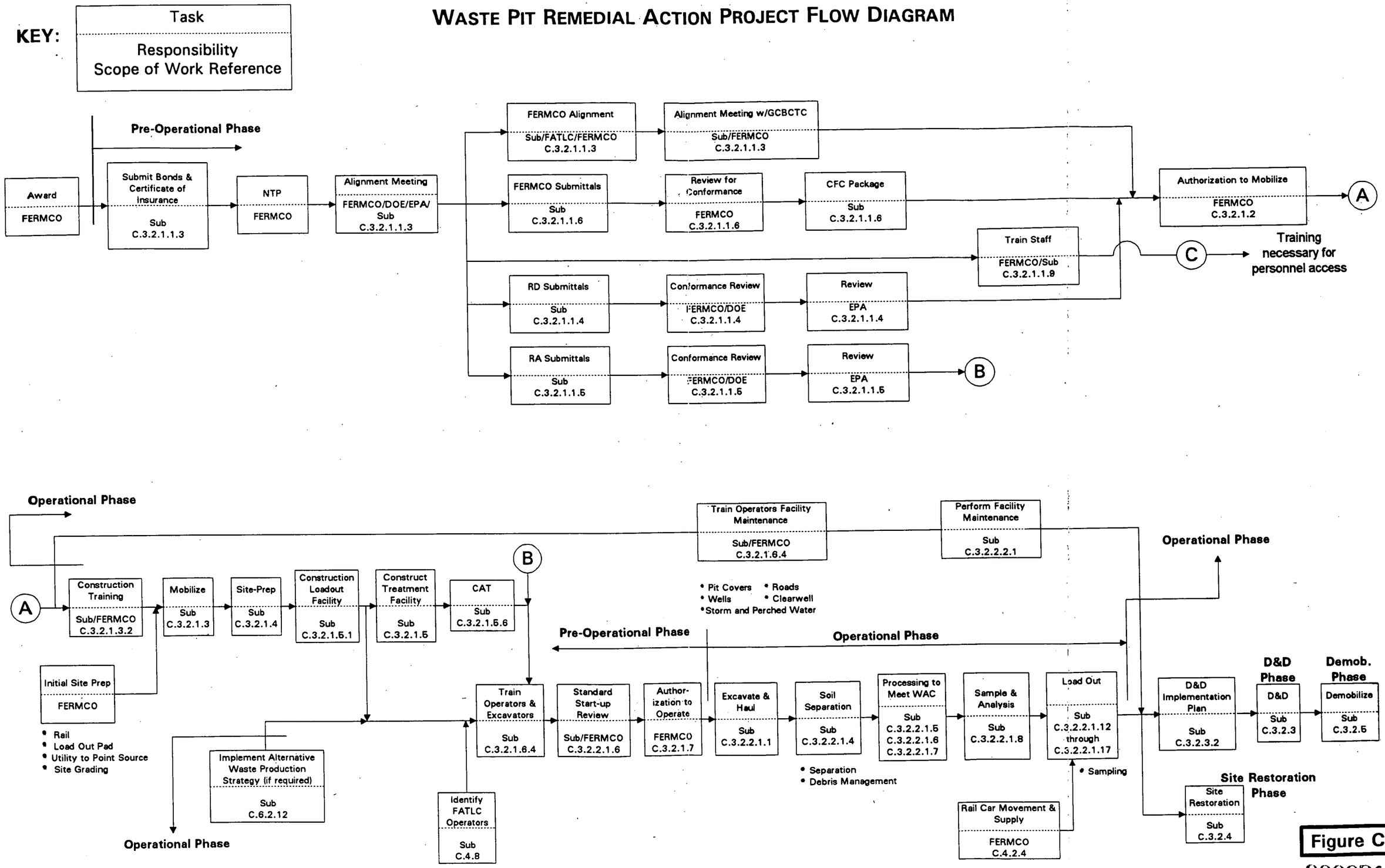


Figure C.2-1

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SECTION C.3

SCOPE OF WORK

C.3.1 GENERAL WORK DESCRIPTION

The subcontractor shall furnish management, labor, tools, equipment and material to design, construct, operate and maintain equipment, processes, and facilities required to perform remediation activities of the Waste Pits 1 through 6, the Burn Pit and Clearwell. Work shall include, providing required documentation, designing, constructing and operating the facility to process the waste, excavating the waste pits, separating and staging waste, thermal drying of the waste, mixing or blending as required, loading waste in railcars (or boxes, as applicable) for shipping, sampling and certification of the waste per the Waste Acceptance Criteria (WAC), and decontamination and dismantlement of the subcontractor's facility and equipment in accordance with the FERMCO performance specifications, and all other requirements of this subcontract. The facility will be designed, operated, and maintained such that it is less that hazard category 3, Other Industrial Facility, as defined in DOE-EM-STD-5502.

The subcontractor shall utilize Fernald Atomic Trades and Labor Council (FAT&LC) and Greater Cincinnati Building and Construction Trades Council (GCBCTC) personnel in the performance of its remediation activities, in accordance with the Collective Bargaining Agreement (CBA) and the Project Labor Agreement (PLA), respectively (See Section C.4.8).

The subcontractor shall develop submittals for FERMCO compliance/conformance review, and implement a Labor Relations Plan to ensure compliance with the PLA with the GCBCTC and the CBA with FAT&LC. Refer to Section C.4.8.

The subcontractor shall plan and manage his work for removal of its facility and equipment upon completion of the waste pit remediation project, the subcontractor shall perform decontamination of material and equipment to the established release criteria as discussed in Sections C.3.2.3, C.5.1.2, and C.7.2.2. However, due to the radiological constituents of concern, the subcontractor may not be able to remove all of its material and equipment from the site, unless the subcontractor has a license to receive radioactive material and equipment that are properly packaged/wrapped/sealed so as to prevent the spread of contamination, and meet the regulatory requirements regarding the shipment of radiological materials (refer to Attachment J.3.4).

The subcontractor may choose to remove equipment from site for use on other subcontractor projects. The subcontractor shall adhere to the U.S. Department of Transportation (DOT) and all other applicable requirements for shipping contaminated equipment.

C.3.2 SPECIFIC DESCRIPTION OF WORK

C.3.2.1 Pre-Operational Phase

The subcontractor shall perform the following pre-mobilization, mobilization, site preparation, facility construction, and pre-operational programmatic activities, as part of the pre-operational phase of the project. Pricing for activities included in the Pre-operational Phase should be included under Line Item 001 in Table B.1-2 of Section B of this subcontract.

C.3.2.1.1 Pre-Mobilization

The subcontractor shall perform the following activities as part of the pre-mobilization phase, after award and prior to authorization to mobilize.

C.3.2.1.1.1 After award, and prior to FERMCO issuance of Notice to Proceed, the subcontractor shall submit the following items for FERMCO review: performance and payment bonds per Section H, H.52; and the certificate of insurance per General Provision A.44, Section I.

C.3.2.1.1.2 The subcontractor shall provide all personnel transportation, lodging, and all expenses to conduct any and all site visits, including initial site inspections, tours, and meetings.

C.3.2.1.1.3 Prior to mobilization the subcontractor shall participate in five (5) alignment and project meetings facilitated by FERMCO. Alignment meetings and project meetings shall be held with each of the following organizations: FERMCO management/DOE/EPAs; FAT&LC; and GCBCTC. These meetings will be arranged and facilitated by FERMCO. The objective of these meetings is to establish common goals and perform joint execution planning to accomplish the subcontracted scope of work with emphasis on safety, quality, compliance with regulatory requirements, budget, and schedule. The meetings are expected to last two (2) days each. The agenda will be jointly prepared by FERMCO and the subcontractor.

C.3.2.1.1.4 The subcontractor shall submit the following Remedial Design (RD) documents, as a single package, for compliance review and approval by FERMCO, DOE, and the EPAs prior to authorization to mobilize:

- Design Package consisting of:
  - Plant Facilities Engineering Package (see Section C.5.1.3.1)
  - Excavation Plan (see Section C.6.3.1.6)
  - Pre-Operational Schedule (see Section C.4.6.2)
- Health & Safety Plan for Site Preparation and Facility Construction activities (see Section C.5.2.3.3 and Attachment J.3.3)
- Environmental Control Plan for Site Preparation and Facility Construction activities (see Section C.5.2.3.2)
- Site Preparation Package (see Section C.5.2.3.1)
- Operations & Maintenance Plan for the management of existing FEMP facilities within the subcontractor's work area (see Section C.6.3.1.1)

These documents will be a FERMCO/DOE submittal to the EPAs. The submittal process (as described in Section C.4.7) will require the submittal to be reviewed concurrently by FERMCO and DOE, and comments incorporated prior to submittal to the EPAs, then a review by the EPAs, and comments incorporated prior to resubmittal for approval by the EPAs. Refer to the Deliverables/Submittals Requirements Form in Section C.4.7 (Figure C.4.7-2).

C.3.2.1.1.5 The subcontractor shall submit various Remedial Action (RA) documents, as a single package, for compliance review and approval by FERMCO, DOE, and the EPAs prior to authorization to operate:

- Operations & Maintenance Plan (see Section C.6.3.1.1)
- Operational Environmental Control Plan (see Section C.6.3.1.5)
- Sampling & Analysis Plan (see Section C.6.3.1.4)
- Health & Safety Plan for Remedial Action Operations (see Section C.6.3.2)

All of the above documents will be FERMCO/DOE submittals to the EPAs. The submittal process (as described in Section C.4.7) will require the submittal to be concurrently reviewed by FERMCO and DOE, and comments incorporated prior to submittal to the EPAs, then a review by the EPAs, and comments incorporated prior to resubmittal for approval by the EPAs. Refer to the Deliverables/Submittals Requirements Form in Section C.4.7 (Figure C.4.7-2).

C.3.2.1.1.6 The subcontractor shall submit the following for compliance/conformance review and approval by FERMCO prior to authorization to mobilize:

- Quality Assurance Plan (see Section C.6.3.3 and Attachment J.3.5)
- Health & Safety Program (see Attachment J.3.3)
- Labor Relations Plan (see Section C.4.8)
- Work Force Utilization Plan (see Section C.4.8)
- Safety Assessment (see Attachment J.2.3)
- Safe Work Plan (see Section C.5.3.3.4)

These plans/documents should encompass the subcontractor's scope of work from pre-mobilization to demobilization. In addition, the subcontractor shall submit for conformance review prior to authorization to mobilize, the Certified for Construction (CFC) Package, in accordance with Section C.5.3.3.1.

C.3.2.1.1.7 The subcontractor shall plan for and conduct any environmental investigations, engineering studies, geotechnical investigations, and site surveys as deemed necessary by the subcontractor to complete its design. These investigations and site surveys shall be in accordance with Section C.5.1.2.

C.3.2.1.1.8 The subcontractor shall perform and report the results of a HAZOPs review of the facility design, including operating plan. The HAZOPs review shall be conducted for any segment of the facility, the failure of which would create an unsafe workplace, release contaminants in quantities above the maximum permitted release levels or result in a failure to achieve monthly processing targets.

C.3.2.1.1.9 The subcontractor shall ensure that all personnel receive the appropriate training prior to access on site (see Attachment J.3.3).

C.3.2.1.2 Authorization to Mobilize

Authorization to mobilize will be issued by FERMCO in writing after the completion of the activities identified in Sections C.3.2.1.1.3, C.3.2.1.1.4, C.3.2.1.1.6, C.3.2.1.1.7 (if necessary), and C.3.2.1.1.8, as well as submittal of the signed Letter of Assent (PLA) (see H.31 and J.4.8), and upon written request from the subcontractor.

C.3.2.1.3 Mobilization

Following authorization to mobilize, the subcontractor shall mobilize personnel, tools, material, and equipment to the job site to perform site preparations for construction of the treatment facilities.

C.3.2.1.3.1 The subcontractor shall install any temporary offices, trailers, etc., for use during performance of this subcontract in accordance with Section C.4.2.3.1.

C.3.2.1.3.2 The subcontractor shall ensure that all personnel training requirements necessary to initiate mobilization activities (e.g., project Health & Safety Program) are met (see Attachment J.3.3).

C.3.2.1.3.3 The subcontractor shall establish all material and equipment receiving and lay down areas.

C.3.2.1.3.4 The subcontractor shall receive all material and equipment required to construct and operate the facility.

C.3.2.1.3.5 The subcontractor shall store and maintain material and equipment in accordance with the manufacturer's recommendations.

C.3.2.1.3.6 The subcontractor shall identify and establish a queuing area for receipt of FERMCO furnished containers. The queuing area shall be accessible from each side of the project boundary.

C.3.2.1.3.7 The subcontractor shall identify and establish a materials storage area for receipt of material from other FERMCO projects. This storage area shall be accessible from each side of the project boundary.

C.3.2.1.4 Site Preparation

Following mobilization, the subcontractor shall perform the following site preparation activities in accordance with the requirements in Section C.5.2.2, the subcontractor's CFC design, and the approved Site Preparation Package (see Section C.5.2.3.1).

C.3.2.1.4.1 The subcontractor shall perform all earth work required to construct the subcontractor's remediation facility.

C.3.2.1.4.2 The subcontractor shall install all utilities (e.g., aboveground utilities, gas and water, power lines) from the FERMCO point source to the treatment facility. All utility tie-ins shall be in accordance with the requirements of Section C.5.2.2.7 and the tie-in points identified on Figure C.1-3.

C.3.2.1.4.3 The subcontractor shall establish all necessary and required haul roads and implement environmental control measures in accordance with the subcontractor's approved Environmental Control Plan (see Section C.5.2.3.2).

C.3.2.1.4.4 The subcontractor shall install all fencing required in the subcontractor's work area in accordance with Section C.5.2.2.5.

C.3.2.1.4.5 The subcontractor shall furnish all PPE (disposable & washable anti-C's, respirators, boots, boot covers, gloves, etc.) necessary to support proposed remediation activities. Refer to Attachment J.3.4 for details relative to PPE.

C.3.2.1.4.6 The subcontractor shall furnish a mobile laboratory for performing analyses of all its samples in accordance with Section C.5.2.2.12.

C.3.2.1.4.7 The subcontractor shall supply all respirator wash facilities/services required to maintain respirator cleanliness in accordance with the safety and health section and technical requirements. Refer to Section C.5.2.2.10 and Attachment J.3.4.

C.3.2.1.4.8 The subcontractor shall furnish a laundry facility/service required to maintain washable Anti-C's. Refer to Attachment J.3.4 for cleanliness criteria, and to Section C.5.2.2.9 for technical requirements relative to this facility.

C.3.2.1.4.9 The subcontractor shall furnish control point trailers for storage of the PPE. This facility shall be used for donning and doffing of anti-C's, and issuing of respirators. Refer to Section C.5.2.2.11 and Attachment J.3.4 for criteria for this facility.

C.3.2.1.4.10 The subcontractor shall provide any additional portable structures, which it deems necessary, in accordance with Section C.5.2.2.8.

C.3.2.1.5 Facility Construction

The subcontractor shall sequence and perform all construction activities to achieve the initiation of operations, such that a product is produced and loaded which meets the PCDF WAC, on or before July 1, 1998. This may involve an expedited design, and the expedited development and approval of various RA and FERMCO deliverables, construction of the railcar loading facility, completion of a training program, startup review for these facilities, and authorization to operate (see Section C.6.2.12). Completion of the remainder of the remediation facilities would follow.

C.3.2.1.5.1 The subcontractor shall construct the railcar loading facility (see Section C.6.10).

C.3.2.1.5.2 The subcontractor shall erect all required buildings (including concrete foundations and pads) required for the treatment facility in accordance with the subcontractors CFC design (Section C.5.3.3.1). No deviations shall be permitted without FERMCO's concurrence (refer to Attachment J.3.5-Quality Assurance Requirements).

C.3.2.1.5.3 The subcontractor shall install all process equipment (e.g., thermal drying equipment, shredder-crusher, conveyors, etc.) in accordance with the subcontractor's design specifications, drawings and vendor recommendations.

C.3.2.1.5.4 The subcontractor shall implement all access and traffic controls, within the subcontractor's work area.

C.3.2.1.5.5 The subcontractor shall dispose of all construction waste in accordance with Section C.5.1.2.2.1 and Attachment J.4.3.

C.3.2.1.5.6 The subcontractor shall perform all construction acceptance test in accordance with specifications and the Construction Acceptance Tests Plan (see Section C.5.3.3.2).

C.3.2.1.6 Pre-Operational Programmatic Activities

Following completion of the facility construction activities, but prior to initiation of operations, the subcontractor shall perform the following pre-operational programmatic activities, including operational training of personnel, start-up and operational testing, etc., in accordance with the requirements of Section C.5.4.

C.3.2.1.6.1 The subcontractor shall prepare administrative and operating procedures in accordance with the principles of the CONOPS program and the requirements in Section C.5.4.3.2. The final subcontractor CONOPS program shall be incorporated into the Project Manager's Standing Orders Manual.

C.3.2.1.6.2 The subcontractor shall incorporate the administrative requirements from FERMCO CONOPS program into the Standing Orders Manual or develop procedures that correspond to the requirements.

C.3.2.1.6.3 The subcontractor will develop specific technical procedures for "operations" activities (e.g., segregation, processing, loadout).

C.3.2.1.6.4 The subcontractor shall provide training of personnel for operation of the subcontractor's equipment in accordance with the subcontractor's approved Operator Training Program Plan (reference Section C.5.4.3.2) and the approved Operation and Maintenance Plan (reference Section C.6.3.1.1).

C.3.2.1.6.5 The subcontractor shall conduct Systems Operability Testing (SOT) in accordance with the requirements in Section C.5.4.2.4.

C.3.2.1.6.6 The subcontractor shall support the performance of all Standard Start-up Review in accordance with the design specifications, subcontract documents and the approved Operation and Maintenance Plan (reference Section C.6.3.1.1).

C.3.2.1.7 Authorization to Operate

Authorization to operate will be issued by FERMCO in writing after the completion of the facility construction, approval by the EPAs, of the RA documents identified in Section

C.3.2.1.1.5, completion of Standard Start-Up Review (see Section C.5.4.2.5), and upon receipt of a written request from the subcontractor.

C.3.2.2 Operational Phase

The subcontractor shall perform the following operations and maintenance activities, as part of the operational phase of the project. Pricing for activities included in the operational phase should be included under line items 002, 003 and 004 in Table B.1-2 of Section B of this subcontract.

C.3.2.2.1 Operations

For the purpose of this subcontract, and the discussions herein, operations is broadly defined in the context of the implementation of an EPA-approved remedial action and includes not only the operations of the treatment facility, but also activities which are ancillary to the treatment of the waste, such as excavation, materials handling, loadout, maintenance, management and oversight. Specifically, operations of the facility shall consist of excavation of the waste pits, blending/mixing, staging stock piles of waste and debris, loading of waste into treatment equipment, treating waste, staging, sampling and analysis of the treated waste, preparation of FERMCO furnished railcars (or boxes, as applicable), and loading of railcars (or boxes).

C.3.2.2.1.1 The subcontractor shall perform excavation and transporting of material from the waste pits in accordance with Section C.6.2.2 and the approved Operation and Maintenance Plan and Excavation Plan.

C.3.2.2.1.2 The subcontractor shall blend pit wastes and contaminated soil as necessary to create a homogenous waste product that will satisfy the WAC for the PCDF and any material handling requirements within the process (see Section C.6.2.3).

C.3.2.2.1.3 The subcontractor shall stockpile waste and contaminated soil as necessary to provide adequate surge capacity for unit operations, in accordance with the requirements in Section C.6.2.4.

C.3.2.2.1.4 The subcontractor shall separate/segregate as required and stage waste in accordance with Section C.6.2.5.

C.3.2.2.1.5 The subcontractor shall size reduce debris extracted from the waste pits as necessary to meet the size requirements of the PCDF, in accordance with the requirements in Section C.6.2.7.

C.3.2.2.1.6 The subcontractor shall transfer waste from the waste pits to the process area, and between stockpiles and unit operations within the process, in accordance with the requirements in Section C.6.2.8.

C.3.2.2.1.7 The subcontractor shall thermally dry any waste that exceeds the moisture content requirements of the PCDF after blending and dewatering, in accordance with the requirements in Section C.6.2.9.

C.3.2.2.1.8 The subcontractor shall arrange for/perform all analyses required for continuing acceptance of waste at the disposal facilities in accordance with the approved Sampling and Analysis Plan (reference Section C.6.2.17).

C.3.2.2.1.9 If necessary, the subcontractor shall plan and implement an alternative waste production strategy for the loading of waste material that meets the WAC for the PCDF as excavated. Implementation of this strategy would be required to meet the July 1, 1998 deadline for processing and loading of waste, if the subcontractor's treatment process (i.e., thermal dryer, debris management and size reduction, etc.) is not on line by this date (see Section C.6.2.12).

C.3.2.2.1.10 The subcontractor shall plan for any special material handling and/or treatment required for "non-typical waste" as specified in Section C.6.2.13.

C.3.2.2.1.11 The subcontractor shall load FERMCO furnished railcars or boxes for shipment to the disposal facility in accordance with Section C.6.2.10 and C.5.1.2.2.1. The subcontractor shall take measures, during loading, to protect the exterior of railcars and containers from contaminated soil and debris.

C.3.2.2.1.12 The subcontractor shall treat, as necessary to meet the PCDF WAC, and load into FERMCO furnished railcars, wastes received from other FEMP OUs destined for disposal at the PCDF. Such wastes shall be delivered to the subcontractor at the subcontractor's queuing area, or other mutually agreed upon location.

C.3.2.2.1.13 The subcontractor shall furnish all railcar liners and covers in accordance with Section C.6.2.11.

C.3.2.2.1.14 The subcontractor shall prepare each FERMCO furnished railcar prior to and after load out. Preparation prior to load out shall consist of removal and inspection of lid, repair/replacement of the lid (if necessary) and installation of liner. Preparation after load out shall consist of closing/sealing the liner, and placement of the lid on the railcar (see Section C.6.2.11).

C.3.2.2.1.15 The subcontractor shall weigh railcars using the FERMCO furnished rail scale.

C.3.2.2.1.16 The subcontractor shall generate shipping manifests prior to turnover to FERMCO for shipment to the PCDF.

C.3.2.2.1.17 The subcontractor shall decontaminate railcars in accordance with Attachment J.3.4 prior to turnover to FERMCO for shipment to the PCDF.

C.3.2.2.1.18 The subcontractor shall perform interim/temporary grading of the waste pit area in accordance with the approved Excavation Plan.

C.3.2.2.1.19 The subcontractor shall perform a controlled shutdown of the facility after final treatment of the waste, at any time during scheduled maintenance outages/turnarounds of the facility, or for a prolonged period of time per Section C.6.2.18.

C.3.2.2.1.20 The subcontractor shall prepare a Contingency Plan to protect the subcontractor, FEMP employees, and the local community in the event of an emergency incident, as specified in Section C.6.2.14.

C.3.2.2.1.21 The subcontractor shall perform all operations in accordance with the approved Health & Safety Plan for Remedial Action Operations and the approved Operational Environmental Control Plan.

C.3.2.2.2 Maintenance

Maintenance shall consist of maintenance of all items within the subcontractor's work area, including, but not limited to the following maintenance activities:

C.3.2.2.2.1 The subcontractor shall, upon authorization to mobilize, maintain all existing facilities, equipment, utilities, etc., within the subcontractor's work area (see Figure C.1-3), including the stormwater management system and ponds, pit covers, clearwell, roads, and utilities.

C.3.2.2.2.2 The subcontractor shall perform maintenance activities in accordance with the approved Operation and Maintenance Plan and procedures.

C.3.2.2.2.3 The subcontractor shall perform all maintenance activities of all of its facilities and equipment, including replacement of parts and equipment.

C.3.2.2.2.4 The subcontractor shall maintain on site, calibration records on all its equipment and instruments requiring calibration including monitoring equipment and health and safety equipment.

C.3.2.2.2.5 The subcontractor shall maintain all roads and cut grass within the subcontractor's work area.

C.3.2.3 <u>Decontamination and Dismantlement Phase</u>

Decontamination and Dismantlement (D&D) shall consist of decontamination, dismantlement and disposition of the subcontractor's waste remediation facility including decontamination of equipment and buildings. Pricing for activities included in the decontamination & dismantlement phase should be included under Line Item 005 in Table B.1-2 of Section B of this subcontract.

The subcontractor shall use one or more of the following five (5) options to perform the decontamination and dismantlement of the facility.

1) Decontaminate the equipment and material to the free release criteria as specified in Section C.7 to be reused by the subcontractor for future projects or disposal.

2) Decontaminate and dismantle the equipment and material to the waste acceptance criteria for disposal in the On Site Disposal Facility (OSDF). The subcontractor shall be charged for transportation and disposal of the subcontractor's equipment or material in the OSDF in accordance with

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Section B, Table B.2-2. Material to be shipped to the OSDF shall be size-reduced to meet the acceptance criteria for the OSDF, placed in FERMCO furnished roll off boxes and delivered to the subcontractor's queuing area by the subcontractor.

3) Decontaminate and dismantle the equipment and material to the waste acceptance criteria for disposal at the Permitted Commercial Disposal Facility (PCDF). The subcontractor shall be charged for the cost of shipping and disposal of the subcontractor's material and equipment at the PCDF in accordance with Section B, Table B.2-2. Material to be shipped to the PCDF shall be sized to meet the waste acceptance criteria (WAC) for the PCDF and placed in railcars for shipping.

4) The subcontractor shall load equipment and material that cannot be re-released and does not meet the WAC for the PCDF or the OSDF into containers for shipment to NTS. The subcontractor shall be responsible for movement of the containers to the queuing area. The subcontractor shall be charged for the containers, shipping cost and disposal cost for shipping subcontractor generated waste to the NTS disposal facility in accordance with Section B, Table B.2-2.

5) The subcontractor may also have the option to either use its NRC license, if it possesses one, to remove its equipment from the site, or transfer its equipment to another DOE facility.

More specifics relative to the requirements associated with each of these options is further described in Table C.3-1.

C.3.2.3.1 The subcontractor shall submit for FERMCO concurrence, its Safe Work Plan for decontamination and dismantlement in accordance with Section C.7.1.2. The plan shall include all necessary items, including but not limited to control of fugitive emissions, engineering controls to prevent equipment contamination during D&D activities, release cleaning, dismantlement techniques, construction safety, radiological PPE requirements, rigging, associated hazards, etc. Refer to Section C.5.3.3.4 for Safe Work Plan outline.

C.3.2.3.2 The subcontractor shall submit an Implementation Plan prior to the start of the D&D activities, in accordance with Section C.7.1.1. This document, which provides details to the approach for the D&D of the subcontractor's remediation facilities, will be a FERMCO/DOE submittal to the EPAs. The submittal process (as described in Section C.4.7) will require the submittal to be reviewed concurrently by FERMCO and DOE, and comments incorporated prior to submittal to the EPAs, then a review by the EPAs, and comments incorporated prior to resubmittal for approval by the EPAs. Refer to the Deliverables/Submittals Requirements Form in Section C.4.7 (Figure C.4.7-2).

C.3.2.3.3 The subcontractor shall perform utility disconnect activities. Utilities shall be removed back to the point source provided by FERMCO. Facilities may be isolated from utilities on a building by building basis or in groups of buildings to suit the subcontractor's demolition sequence.

C.3.2.3.4 The subcontractor shall perform decontamination of the equipment and facility to the criteria established in Section C.7.2.2.

C.3.2.3.5 The subcontractor shall perform dismantlement of the facility and equipment in accordance with Section C.7.2.

C.3.2.4 Site Restoration Phase

Site Restoration shall consist of restoration of the waste pit area including grading, excavation, compaction, and filling. Pricing for activities included in the site restoration phase should be included under Line Item 006 in Table B.1-2 of Section B of this subcontract.

C.3.2.4.1 The subcontractor shall perform final site grading of the waste pit area including excavation, compaction, filling and survey of the project area as identified by the CFC drawings and the approved Excavation Plan.

C.3.2.4.2 The subcontractor shall provide "as built" drawings, including topographical maps, at completion of the project. Such maps and drawings shall be certified by a registered Professional Surveyor.

C.3.2.4.3 The subcontractor shall implement erosion control measures to prevent wind and water erosion and to control sediment runoff.

C.3.2.4.4 The subcontractor shall implement fugitive dust control measures in accordance with Section C.8.2.5.

C.3.2.5 Demobilization Phase

Demobilization shall consist of removal of all the subcontractor's temporary facilities, equipment, and documentation close out. Pricing for activities included in the demobilization phase should be included under Line Item 007 in Table B.1-2 of Section B of this subcontract.

C.3.2.5.1 The subcontractor shall remove all temporary facilities and equipment installed under this subcontract, from the site. All items leaving the site must have a radiological survey and meet the criteria for release in the specification.

C.3.2.5.2 The subcontractor shall ensure that all contract requirements are complete and final documentation is closed out.

TABLE C.3-1
DECONTAMINATION & DISMANTLEMENT OPTIONS TABLE

D&D OPTIONS	FREE RELEASE	NRC LICENSED REMOVAL	SALE/TRANSFER TO ANOTHER DOE SITE	OSDF DISPOSAL	PCDF DISPOSAL	NTS DISPOSAL
REQUIREMENTS	- Subcontractor decons all equipment. - Subcontractor disassembles all equipment for rad survey. - Subcontractor request Rad survey per section J. - Subcontractor meets all Free Release requirements. - Subcontractor provides all containers, packing and shipping. - Subcontractor responsible for all cost.	- Subcontractor must have NRC license in place at time of D&D, or contract agreement with another NRC licensed firm. - Subcontractor provides all containers, packing, shipping, cleaning,decon and preparation. - Subcontractor must comply with all DOT & NRC requirements. - Subcontractor responsible for all cost.	- Subcontractor must have written agreement in place with receiving DOE facility at time of D&D. - Subcontractor provides all cleaning, decon, preparation, containers, packing shipping. - Subcontractor shall meet all shipping requirements. - Subcontractor shall meet all DOE receiving site requirements. - Subcontractor responsible for all cost.	- FERMCO provides containers. - Subcontractor performs D&D per the requirements of Section C.7. - Subcontractor tests to certify meets OSDF WAC. - FERMCO verifies WAC. - Subcontractor performs all cleaning size reducing, packaging, preparation etc.. - FERMCO transfers material to OSDF. - Subcontractor responsible for all cost including containers, shipping and disposal.	- FERMCO provides containers. - Subcontractor performs D&D per the requirements of Section C.7. - Subcontractor tests to certify meets PCDF WAC. - FERMCO verifies WAC. - Subcontractor performs all cleaning packaging, preparation etc.. - FERMCO transfers (ships) material to PCDF. - Subcontractor responsible for all cost including containers, shipping and disposal.	- FERMCO provides containers. - Subcontractor performs D&D per the requirements of Section C.7. - Subcontractor tests to certify meets NTS WAC. - Waste shall be packaged in accordance with the requirements contained in Section C.7 - FERMCO verifies WAC. - Subcontractor performs all cleaning packaging, preparation etc.. - FERMCO transfers (ships) material to NTS. - Subcontractor responsible for all cost including containers, shipping and disposal.

Note: Subcontractor may choose one or multiple options.

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SECTION C.4

GENERAL PROJECT REQUIREMENTS

The section provides information relative to project requirements which are general in nature (i.e., requirements which apply to various phases of the project).

C.4.1 FERMCO RESPONSIBILITY INTERFACES

As indicated throughout this subcontract, FERMCO has various responsibilities associated with the implementation of this project, some of which will have a direct impact on the time it takes the subcontractor to perform its activities and/or could otherwise interface with the subcontractor's ability to complete its activities. Table C.4.1-1 provides a listing of various tasks to be performed by FERMCO, which could have a direct impact on the subcontractor's activities. For each interface task identified, the table also provides information relative to the frequency that the interface can be expected, the approximate duration of the interface activity, the FERMCO organization specifically involved (if known), and the portion of the project wherein this interface can be expected. These interfaces are being identified so that the subcontractor can factor them into the planning/sequencing of its own activities.

TABLE C.4.1-1

FERMCO RESPONSIBILITY INTERFACES

Task	Freq.	Approx Dur.	Group	Pre-Mob	Mob	Const.	Oper.	Maint	D&D	Site Rest	Demob
Entry Inspec. Tools/Equip. Attach.J.3.3	Per Delivery	1.5 hr per item	FERMCO Safety & Health		X	X	X	X	X	X	X
Exit Inspec. Tools/Equip. Attach.J.3.4	Per Delivery	1.5 hr per item	FERMCO Rad Safety		X	X	X	X	X	X	X
Site Rail Maintenance & Calibration Scale	Yearly	As required	FERMCO				X	X	X		
Permits Per Attach.J.3.3	NA	NA	FERMCO		X	X				X	
Quality Oversight Attach.J.3.5	Full Time	Full Time	FERMCO		X	X	X	X	X	X	X
Safety & Health Oversight Attach.J.3.3	Full Time	Full Time	FERMCO	X	X	X	X	X	X	X	X
Final Restoration Plan Sect.C.8	NA	NA	FERMCO							X	X
Radiological Control Attach.J.3.4	Full Time	Full Time	FERMCO		X	X	X	X	X	X	X

TABLE C.4.1-1 (CONTINUED)

Task	Freq.	Approx Dur.	Group	Pre-Mob	Mob	Const.	Oper.	Maint	D&D	Site Rest	Demob
FAT&LC Labor & Supervision Sect.C.4.8	Per CBA	Per CBA	FERMCO				X	X			
Shipping Containers (other than rail cars) Sect. C.4.2	As Req.	5 Days After Notified	FERMCO		X	X	X	X	X	X	X
Rail Cars Sect. C.6.2.E.10	Each Day	As Req.	FERMCO				X				
Rail Car Maint. Sect. C.6	As Req.	As Req.	FERMCO				X				
Site Rail Maint. Sect. C.6	Yearly	As Req.	FERMCO				X	X	X		
Rail Car Exit Survey Attach. J.3.4	Each Day	2 Hr. Each Car	FERMCO Rad Safety				X				
Final Confirm. Sample & Analysis Sect. C.6.E.2	As Req.	per Section C.6.2.E.2	FERMCO							X	
Security	Full Time	Full Time	FERMCO	X	X	X	X	X	X	X	X
Groundwater Monitoring	Full Time	Full Time	FERMCO	X	X	X	X	X	X	X	X
Eviron. Monitoring Testing	Full Time	Full Time	FERMCO	X	X	X	X	X	X	X	X

NA - Not Applicable

C.4.2 FACILITIES/UTILITIES

C.4.2.1 The subcontractor will be given access to electrical, gas and water services at the work site. The quantities and characteristics of these utilities will be limited to that which is available, as identified below, from existing tie-in points as shown on Figure C.1-3. The subcontractor will be responsible for extending these services to those locations where they are required. Toll Call telephone service must be accessed through the long distance operator and paid for directly by the subcontractor.

Power: 1500/2000 kva, 13.2 kv - 480 Volt Substation
Potable Water: 90 gpm. at 40 - 50 psi.
Fire Water: 2 hydrants, 100 psi at 1500 gpm.
Natural Gas: 850 scfm interruptable service at 60 psi.*
Telephone: 50-pair telecommunications cable

* Service may be interrupted twice a year at peak times with a two (2) hour notice from CG&E to FERMCO.

C.4.2.2 FERMCO will furnish the following facilities:

FERMCO will furnish a quadruplex trailer facility (i.e., Change Out Facility) that will have showers, sanitary facilities and a break room for lunches (refer to Figure C.1-3). The Change Out Facility has capacity for 45 men and 15 women.

C.4.2.3 Subcontractor Furnished Facilities

The subcontractor shall furnish any and all facilities necessary to support its activities on the project, including, but not limited to, the following:

C.4.2.3.1 The subcontractor may bring temporary offices, tool trailers, etc., on-site for use during performance of the subcontract. A possible location for these facilities is shown on Figure C.1-3. These facilities must meet the requirements of Section C.5.2.2.8 - Construction/Installation of Portable Structures.

C.4.2.3.2 The subcontractor shall use reasonable care to optimize use of all utilities and install meters and totalizers to measure flow. FERMCO will monitor the subcontractor's utility usage.

C.4.2.4 Movement of shipping containers (other than rail cars) within the work area will be the responsibility of the subcontractor. Movement of rail cars (spotting) into the loadout facility will be by FERMCO, movement of the rail car inside the loadout facility will be by the subcontractor, using a trackmobile furnished by FERMCO.

C.4.2.5 Equipment required for moving containers within the subcontractor's work area shall be the responsibility of the subcontractor.

C.4.2.6 The subcontractor shall request, in writing, additional containers (except rail cars) 5 days prior to the need for the container, by number and type required.

C.4.3 SITE LOCATION, ACCESS, LAYDOWN AREAS AND LIMITS OF PROJECT AREA

C.4.3.1 The subcontractor's work area, access to the work area, including the waste pit and process area locations and access to the job site are shown on Figure C.4-1.

C.4.3.2 The subcontractor will maintain the laydown and work areas in safe, clean and orderly fashion. Storage shall comply with the manufacturer's recommendations and OSHA requirements.

C.4.3.3 The subcontractor shall install and maintain, throughout the performance period of this subcontract, chain link or orange snow fencing around the subcontractor's work area to control access (refer to Section C.5.2.2.5). The subcontractor shall also install and maintain the minimum barrier yellow snow fence for radiological control areas, and orange snow fence at the perimeter of all utility excavations, trenches or other open excavations, as long as they are open.

C.4.3.4 The subcontractor personnel shall park in the construction parking lot as identified on Figure C.1-3.

C.4.4 DELIVERY OF SUBCONTRACTOR FURNISHED MATERIAL AND EQUIPMENT

C.4.4.1 All deliveries to the subcontractor shall be to the subcontractors receiving area. The subcontractor shall install signs along the access road to direct delivery trucks to his queuing area.

C.4.4.2 All deliveries to the subcontractor shall be marked with the subcontractor's name and FERMCO subcontract number.

C.4.4.3 Common Carrier deliveries (FedEx, UPS, etc.) are required to go through the FERMCO Receiving and Incoming Materials Inspection Area (RIMIA). RIMIA hours are from 7:00 a.m. to 3:00 p.m. Monday through Friday except for FERMCO Holidays. Deliveries arriving after 3:00 p.m. will have to wait until the next work day to off-load.

Upon arrival of common carrier delivery for the subcontractor, FERMCO will notify the subcontractor by radio or phone. The subcontractor is required to send a representative to RIMIA within one-half hour of notification.

C.4.4.4 The FERMCO Shipping address is:

FERMCO Attn: TBD
7400 Willey Road
Fernald, OH 45030

C.4.5 WORK HOURS

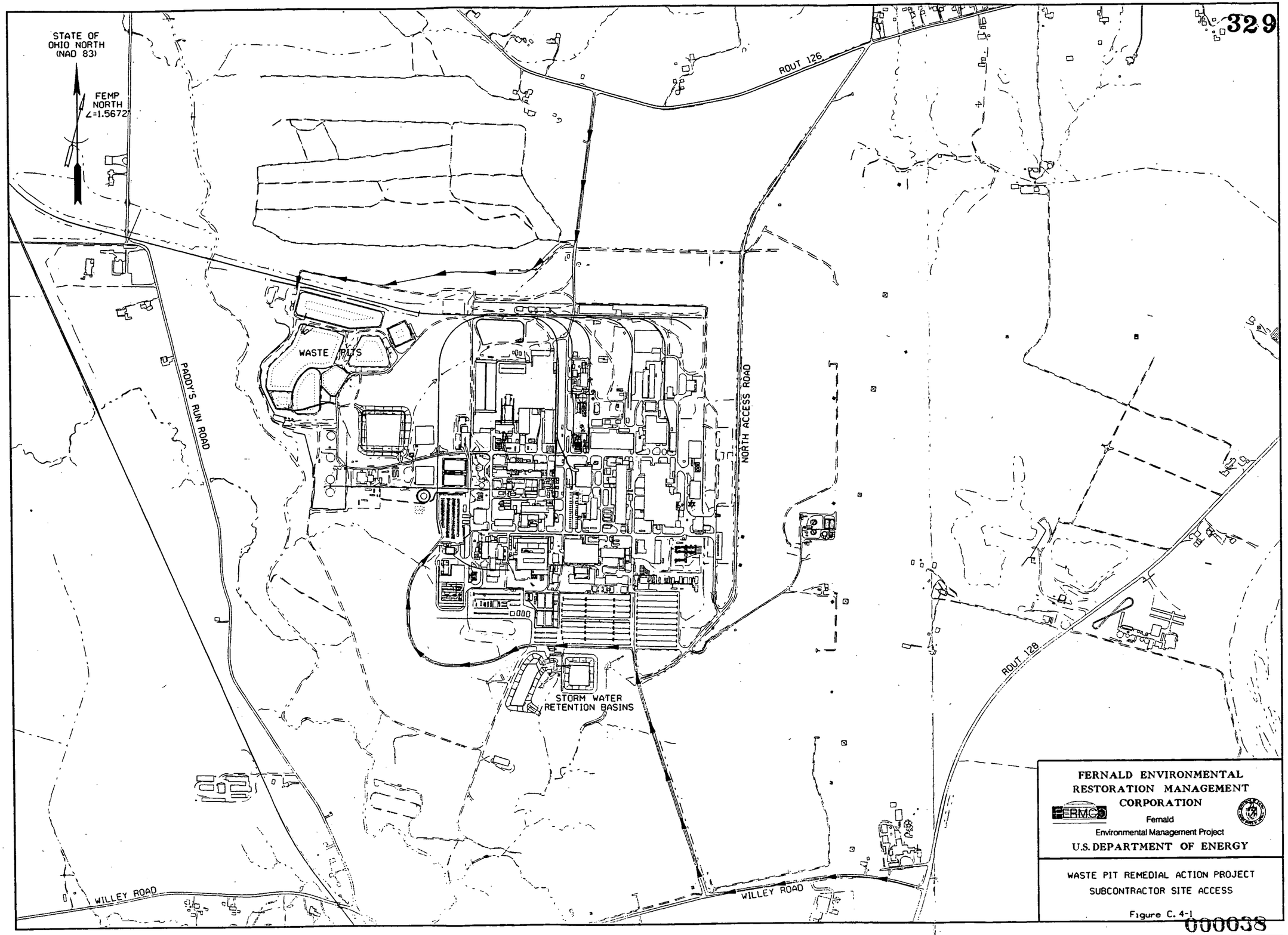
C.4.5.1 Construction (Pre-Mobilization, Mobilization, Site Prep, Facility Construction and D&D)

Normal work hours are from 6:30 a.m. to 5:00 p.m., Monday through Thursday. The subcontractor must request written authorization from the FERMCO Subcontract Administrator at least 4 working days in advance and obtain approval to work outside of these hours.

C.4.5.2 Operations (Excavation, Material Preparation, Waste Treatment & Load out and Maintenance)

The subcontractor shall provide to FERMCO as part of its Operation and Maintenance Plan, a detailed description of the number and type of shifts to be worked during the operational phase of the project in accordance with Section C.4.8.3. These shifts will be reviewed with FAT&LC for their concurrence prior to implementation.

C.4.5.3 See Special Conditions "Holidays" and "Limitations on Overtime."



FERNALD ENVIRONMENTAL
RESTORATION MANAGEMENT
CORPORATION

FERMCO

Fernald
Environmental Management Project

U.S. DEPARTMENT OF ENERGY

WASTE PIT REMEDIAL ACTION PROJECT
SUBCONTRACTOR SITE ACCESS

Figure C. 4-1

The subcontractor shall plan for the limitation on overtime as defined in Special Requirements H.11 and H.27, respectively, when preparing work and shift schedules.

C.4.6 SCHEDULING

C.4.6.1 Figure C.4.7-2 provides a summary of the submittal dates for the deliverables required by this subcontract. Based on a project subcontract award date of May 1, 1997, and receipt of identified deliverables according to the requirements presented in Figure C.4.7-2, the subcontractor shall demonstrate the ability to produce and loadout waste product, which meets the PCDF WAC, on or before July 1, 1998.

C.4.6.2 The subcontractor shall submit a detailed and resource loaded pre-operational schedule that shows the activities from pre-mobilization through the completion of facility construction and start-up.

C.4.6.3 The subcontractor shall submit a detailed operation schedule that meets the production rates. The operation schedule shall identify the scheduled maintenance and downtime including excavation activities during the down time. The subcontractor shall produce waste product , which meets the PCDF WAC, on or before July 1, 1998.

C.4.6.4 The subcontractor shall submit a detailed schedule that shows the decontamination and dismantlement phase and demobilization phase of the project.

C.4.6.5 The subcontractor shall develop a rolling schedule which windows four (4) weeks of the subcontractor resource loaded detailed pre-operational schedule (Construction phases only) each time it is issued, consisting of the past week, the present week and the next two weeks to come. The subcontractor shall meet with the FERMCO Technical Representative to review/prepare the weekly Four Week Schedule, throughout the duration of the subcontract, or as directed by the FERMCO Technical Representative (not to exceed one time per-week).

C.4.6.6 The subcontractor is required to use Primavera's P3 software (Version 4.0 or higher) to prepare the required project schedules. A computer disk containing the updated project schedule shall be submitted along with the schedule update.

C.4.6.7 The following are monthly reporting requirements which shall be generated and submitted by the subcontractor to FERMCO to document the current and cumulative status and progress for each month:

1) Gantt chart format including activity ID and description, duration, early start and early finish dates, and total float.

2) Report showing demand and utilization of FAT&LC laborers, and utilities (i.e., electric, gas, and water).

3) Progress curves displaying status based on actual, planned, and forecast quantities excavated, treated, and loaded for disposal.

4) Schedule Variance reports detailing differences between planned and forecast activities, along with a root cause analysis, and a corrective action plan explaining actions being taken to recover schedule slippage.

C.4.6.8 The subcontractor shall include all major performance milestones, regulatory compliance milestones, design milestones, construction milestones, start up milestones, production milestones, etc., in the schedules. Activities shall be detailed to a level where no duration is longer than three months. Procurement and fabrication schedules shall be incorporated into the schedule network and statused and progressed as part of the monthly reporting requirements.

C.4.7 SUBMITTAL REQUIREMENTS

The subcontractor shall develop, submit, obtain the appropriate reviews and/or approvals, issue and implement the documents specified herein and identified in Figure C.4.7-2, in accordance with the requirements contained in this section. Documents may include, but are not limited to, calculations, reports, sketches, drawings, specifications, financial spending plans, planning and scheduling documents.

C.4.7.1 Submittals - General Requirements

C.4.7.1.1 All documentation shall be legible, sequentially numbered and securely bound.

C.4.7.1.2 All text shall be presented in clear concise English.

C.4.7.1.3 Submittals shall be sent to the FERMCO Subcontract Administrator using the FERMCO Supplier Submittal Form (Fig. C.4.7-1).

C.4.7.1.4 Documents submitted shall be marked with the FERMCO charge number, specification number, equipment number and subcontract number.

C.4.7.1.5 Where documents contain information on more than one model or option, the data shall be marked to indicate the model and options proposed for this subcontract.

C.4.7.1.6 Documents pertaining to a particular submittal must be complete and submitted in one package and separate from other submittals.

C.4.7.1.7 Vendor documents not properly identified in accordance with Items C.4.7.1.1, 2, 3 and 4 from above will be returned to the subcontractor. The subcontractor shall be responsible for delays caused by incomplete or incorrectly marked submittals.

C.4.7.1.8 Document revisions, including the final issue shall use a numeric revision indicator.

C.4.7.1.9 The subcontractor is to submit drawings, manufacturer's information, and other subcontract documents per the following:

	Information, Certified Records or For Compliance Review (initial submittal)	Final Submittal
Drawings Submitted	(1) Reproducible (7) Bluelines or Blacklines	(1) Reproducible (7) Bluelines or Blacklines

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	Information, Certified Records or For Compliance Review (initial submittal)	Final Submittal
Returned to Subcontractor	(1) Reproducible (1) Bluelines or Blacklines	None
Literature Submitted	(8) Copies	(8) Copies
Returned to Subcontractor	(1) Copy	None
Documents Submitted for FERMCO Review	10 + 1 Unbound	10
Documents Submitted for FERMCO/DOE Review	15 + 1 Unbound	15
Documents Submitted for USEPA/Ohio EPA Review	25 + 1 Unbound	25

C.4.7.2 Drawings and Sketches

Drawings and sketches included in submittal packages shall meet the requirements of the following:

C.4.7.2.1 Drawings or sketches shall depict sufficient detail to clearly show the subcontractor's intent.

C.4.7.2.2 Drawings shall be prepared in accordance with ANSI/ASME Standard Y-14 series.

C.4.7.2.3 Drawings and sketches shall have dimensions indicated.

C.4.7.3 Specifications

Specifications shall conform to the standards developed by the Construction Specification Institute (CSI). Specifications shall describe, as a minimum, the performance and technical criteria related to the fabrication and construction of each component of the subcontractor's waste treatment facility and the responsibilities of each party to the contract. For standard off-the-shelf equipment, data sheets can be used as a substitute for a specification.

C.4.7.4 Plans, Reports, and Packages

Each plan, report, package or other deliverable shall be accompanied by the FERMCO Supplier Submittal Form (Figure C.4.7-1). The subcontractor shall maintain plans in a workable form, which may require issuing in-process revisions if the number of approved field changes affecting a plan become too numerous to manage.

Plans, reports, and packages shall be prepared and submitted as follows:

C.4.7.4.1 Title page or cover sheet that identifies author, deliverable, and date;

C.4.7.4.2 Text on standard 8 1/2" x 11" letter size paper; one-way foldouts of larger sizes may be included with the report text;

C.4.7.4.3 Table of contents;

C.4.7.4.4 Summary section with introduction, summary, and conclusions;

C.4.7.4.5 Detailed section with all required information; and

C.4.7.4.6 The minimum text required to present information. (The use of concise technical writing formats is strongly encouraged.)

C.4.7.5 Reviews by FERMCO, DOE, and EPA

FERMCO reserves the right to review and require correction of any submittal that does not comply with the subcontract documents, specifications, standards, and dimensions furnished by FERMCO. However, failure to do so shall not constitute a waiver of any requirements of the contract between FERMCO and the subcontractor. The subcontractor shall allow as much as 14 calendar days for FERMCO review. FERMCO will submit any review comments to the subcontractor in writing. The subcontractor shall comply with the review comments in the development of the next submittal. As appropriate, and agreed to in writing by FERMCO, change pages may be submitted by the subcontractor, in lieu of a complete revision of the deliverable. If any review comments require clarification and/or amplification, the subcontractor shall notify FERMCO in writing within five days of receipt of the comments. To assist reviewers during their review, a copy of the annotated comments shall accompany the subsequent submittal of the reviewed document. For those documents which are identified as requiring DOE review and approval, such documents will be provided to DOE by FERMCO and will undergo a review by DOE concurrent with the FERMCO review, with DOE comments submitted to the subcontractor with FERMCO comments.

For those documents which are identified as requiring USEPA and Ohio EPA review and approval, such documents will be provided to USEPA and Ohio EPA by DOE upon completion of the FERMCO/DOE review process. The subcontractor shall allow 60 calendar days for review by USEPA/Ohio EPA. Based upon the review of these documents, USEPA and Ohio EPA will provide any written comments to the subcontractor through FERMCO/DOE for resolution. The subcontractor will in turn provide FERMCO/DOE with a draft comment response document for subsequent transmittal to USEPA and Ohio EPA. This comment response document shall be provided to the EPAs within 30 days of receipt of their comments and shall provide for each comment, a restatement of the comment, a proposed response to the comment, and an identification of the action to be taken on these design documents to reflect the proposed response. As noted for the specific deliverable, it may or may not be necessary to resubmit a revised document along with the comment response document. As appropriate, and agreed to in writing by the EPAs/DOE/FERMCO, change pages may be submitted in lieu of a complete revision of the deliverable. The EPAs will have 30 days from receipt of the comment response document to review and approve the document, or provide additional comments. This cycle will continue until USEPA and Ohio EPA provide approval of the document, in which case the subcontractor is to begin implementation of the activities identified in the document.

Unless specifically agreed to and/or established ahead of time by FERMCO/DOE, the subcontractor is prohibited from initiating contacts with the USEPA and Ohio EPA with respect to their review of any of the identified deliverables, and the subsequent comments generated by that review. If contacted directly by USEPA or Ohio EPA, the subcontractor is directed to notify FERMCO and postpone contact until the necessity for participation by FERMCO/DOE can be assessed.

C.4.7.6 Submittal Register

Within ten (10) calendar days following Notice to Proceed, the subcontractor shall submit a submittal register to FERMCO. The register shall indicate the type of item (submittal), subcontractor or specification requirement reference, and the subcontractor schedule dates for submitting the above items. Items listed on the register shall be such that all shop drawings or data required under each item will normally be submitted under one transmittal.

C.4.8 LABOR

All non-management wage employees utilized by the subcontractor under this subcontract shall be with the Greater Cincinnati Building and Construction Trades Council (GCBCTC) and the Fernald Atomic Trades and Labor Council (FAT&LC), as described below.

C.4.8.1 Introduction

FERMCO's contract with DOE gives FERMCO responsibility for managing labor relations at the FEMP. FERMCO's Industrial Relations Organization negotiated a Project Labor Agreement (PLA) with the GCBCTC, including all addendums, and a Collective Bargaining Agreement (CBA) with the FAT&LC. The PLA is provided as Attachment J.4.8 and the CBA is included as Attachment J.4.7.

The PLA expires at the end of FERMCO's contract with DOE including any extensions to the current FERMCO contract. The CBA expires February 28, 1998 with provisions for annual renewals.

FERMCO Industrial Relations retains sole responsibility for administering and interpreting both the PLA and CBA.

The FAT&LC represents FERMCO wage employees and affiliated Metal Trade Unions. The GCBCTC represents Building Trade employees and the twenty affiliated unions. Figure C.4.8-1 shows the affiliated unions for both councils.

To promote cooperative labor relations, FERMCO's Industrial Relations Department has implemented an aggressive strategy of enhancing communications and sharing information in a timely manner with the respective signatory labor unions: FAT&LC, GCBCTC, and International Guards Union of America (IGUA) at the FEMP (the subcontractor will not be required to manage any IGUA personnel). The overall objective of this strategy is to increase communication, team work, trust, and productivity between FERMCO management and the represented workforce. This strategy has greatly improved labor relations at the FEMP.

To continue cooperative labor relations for the Waste Pit Remediation Action Project, the subcontractor shall develop a Labor Relations Plan. This Plan will be reviewed by the FERMCO

Industrial Relations Department prior to mobilization. Some of the elements of this Plan should include the following:

1) Who within the subcontractor's organization will be responsible for labor relations so as to promote cooperative labor relations and compliance with the terms and conditions of the PLA and CBA?

2) How will communications be handled so as to promote teamwork, partnering and coordination within the represented workforces?

3) How will the represented workforces be blended and integrated within the project?

4) How will the subcontractor handle dispute resolution so as to minimize grievances?

5) How will the subcontractor coordinate its labor relations efforts with FERMCO Industrial Relations?

The above listing is a sampling of the elements that should be included in the subcontractor's Labor Relations Plan. The subcontractor should include other elements that will add value to the project and promote labor harmony.

Safety and health of all FERMCO and subcontractor personnel is the first priority of FERMCO. Implementation of health and safety relative to this project involves a concerted effort between FERMCO and the subcontractor. The organization of these efforts is shown on Figure C.4.8-2. In that FERMCO has site radiological policies and procedures in place, to which all site personnel are trained, FERMCO's Radiological Control personnel will administer radiological safety on the project (see Attachment J.3.4), thereby alleviating any concerns associated with personnel working under multiple radiological safety programs. All other aspects of health and safety, as well as quality assurance (QA), will be directly administered by the subcontractor, as discussed in Attachments J.3.3 and J.3.5, respectively. FERMCO's participation in these health and safety, and quality assurance activities will consist of oversight and audit responsibilities.

FERMCO's commitment to safety is the workplace extends to all employees and subcontract personnel. FERMCO guarantees the following to its employees, with respect to health and safety:

1) The right to know hazards;

2) The right to refuse work;

3) The right to have input regarding health and safety issues;

4) The right to personnel protective equipment without charge to the employee; and

5) The right to participate in the safety excellence program.

These employee and subcontractor personnel rights are defined in Section 4 of the CBA (Attachment J.4.13).

C.4.8.2 Work Allocation

The block flow diagram (Figure C.4.8-3) represents the work activities which FERMCO anticipated for remediation of the waste pits in their design, build, operate strategy (as discussed in Section J.10 of Attachment J.2). The work allocation table (Figure C.4.8-4) shows the division of work between the GCBCTC & FAT&LC for the activities shown in the block flow diagram. These attachments are for guidance purposes only to assist the subcontractor in producing a similar block flow diagram describing his process.

The Work Force Utilization Plan (Figure C.4.8-5) also shows Wage Position Descriptions for work activities allocated to the FAT&LC and GCBCTC. Jurisdictional assignments for the GCBCTC crafts shall be made by the subcontractor in accordance with provisions of the PLA.

The subcontractor will also perform construction and D&D of the facility. Jurisdictional assignments will depend on components of subcontractor's facilities and shall be made in accordance with both the PLA and CBA.

FAT&LC Wage Position Descriptions are included in Attachment J.4.12.

C.4.8.3 FAT&LC Workforce Provisions

C.4.8.3.1 Management and Supervision

The subcontractor shall manage the FERMCO supervisors who will supervise the FAT&LC Workforce. The FERMCO Supervisor will be responsible for handling all employment and collective bargaining related issues (grievances) with the FAT&LC workforce in conjunction with FERMCO Industrial Relations. The FERMCO supervisor's job description is included in Figure C.4.8-6 and C.4.8-7.

The subcontractor shall request FERMCO to identify potential supervisors at least 30 calendar days in advance of the need. Candidates will be jointly interviewed by the subcontractor and FERMCO. The subcontractor shall identify its choice from among the candidates. The subcontractor's choice will be made available provided there are no violations of the FERMCO policies in the selection process.

The subcontractor is expected to work with and coach the FERMCO supervisor using good management practices. If the subcontractor cannot resolve issues with the FERMCO Supervisors, the subcontractor shall bring these issues to the attention of FERMCO Industrial Relations.

C.4.8.3.2 FAT&LC Workforce Staffing

The subcontractor shall establish job qualifications and training for the allocated work positions which will constitute his labor force.

The subcontractor shall develop a similar block flow diagram and work allocation table as outlined in Figures C.4.8-3 and C.4.8-4, showing how it plans to incorporate the wage employees into its process. Figure C.4.8-5 is an example of how FERMCO planned to incorporate the FAT&LC wage employees in their work process. The subcontractor, by using this attachment and the FAT&LC wage Position Description outlines in Attachment J.4.12 shall develop a Work Force Utilization Plan. This plan should reflect the entire project schedule by year from July 1998 through May

2005 and outline the FAT&LC work force requirements for each year. This Utilization Plan should identify the number and duration of shifts, the number of wage positions required for each shift, and the number of days of processing before shutdown for planned maintenance downtime. The workforce plan should include allowances in the subcontract for absenteeism, training, vacations, holidays, and attrition using the guidance described in Section 4.8.3.7.

The subcontractor shall notify FERMCO of the need and number of personnel required at least 30 calendar days in advance of the need.

FERMCO will post the positions and selection shall be made in accordance with provisions of the CBA. During the Qualifying Period (CBA Section 17-8), the subcontractor and the FERMCO supervisor shall assess the capability of the employees to handle the job. If the subcontractor finds the employee is incapable of handling the new job, the subcontractor shall document its findings and provide them to FERMCO Industrial Relations. Final determination shall be made by FERMCO Industrial Relations based upon conformity to the CBA and FERMCO HR Policy.

C.4.8.3.3 Dispute Resolution

All disputes shall be handled in accordance with the CBA, Grievance Procedure and Arbitration, Article VIII. The subcontractor shall support FERMCO with information, documentation and testimony as required during the process. FERMCO retains the sole right of dispute resolution with the FAT&LC.

C.4.8.3.4 Disciplinary Action

The subcontractor shall address concerns involving violation of the rules of conduct through the FERMCO supervisor in accordance with the CBA and HR Policy 145 (Attachment J.4.27).

Any concerns not addressed by the FERMCO supervisor shall be brought to the attention of FERMCO Industrial Relations.

C.4.8.3.5 Supervisor/Employee Replacement Process

FERMCO will maintain qualified FERMCO site trained supervisory personnel for replacement of supervisors who terminate, transfer by mutual consent of FERMCO and the subcontractor, or are promoted according to FERMCO HR Policy 109 (Attachment J.4.28).

FERMCO will establish a pool of personnel to be available for FERMCO site training to cover work of employees who terminate, are promoted, transfer or take an assignment vacancy. Site trained personnel will be made available within 30 days of occurrence of the event.

C.4.8.3.6 Absenteeism, Sick Time, Holidays, Vacation, Attrition

The subcontractor shall include normal absenteeism for sick time, personal leave, vacation and holidays in workforce planning. Currently FERMCO utilizes a factor of 25 percent for additional personnel due to sickness, training, holidays, vacation, attrition and absenteeism.

C.4.8.3.7 Work Hours

C.4.8.3.7.1 Normal shifts and work hours shall be in accordance with the CBA. The subcontractor may request alternate work schedules to FERMCO. FERMCO will discuss the request of the subcontractor in a joint labor-management meeting with FAT&LC. Changes in the normal shift and work hours can only occur after mutual consent of FAT&LC and FERMCO.

C.4.8.3.7.2 Overtime shall be assigned in accordance with CBA Section 15-6. The FERMCO supervisor will assure administration of these provisions.

C.4.8.3.7.3 Maintenance

The subcontractor shall identify the requirements for a maintenance group to perform daily, shift routine, and scheduled maintenance.

FERMCO will provide maintenance personnel for unscheduled off shift maintenance and emergency maintenance upon 6 hours notice to FERMCO.

The subcontractor has the option to utilize identified maintenance personnel on a regular shift basis in lieu of using the call in system described above. By using this option, the subcontractor could avoid overtime as outlined in the CBA.

C.4.8.4 Subcontractor Responsibilities

C.4.8.4.1 The subcontractor shall submit a Labor Relations Plan as outlined in Section C.4.8.1, for review and approval by FERMCO's Industrial Relations Department.

C.4.8.4.2 The subcontractor shall submit a Work Force Utilization Plan as described in Section C.4.8.3.2. This Utilization Plan shall identify required FERMCO supervision and FAT&LC wage positions by description and number of each required by shift.

C.4.8.4.3 Operational and Maintenance Procedure Training

The subcontractor shall be responsible for all operational and maintenance training required for personnel, to include GCBCTC, FAT&LC, FERMCO Supervisors, and all replacements through the duration of the contract.

C.4.8.4.4 Medical

FERMCO will provide Medical and Bioassay Services for FERMCO Supervisors and FAT&LC employees for required services identified in Attachment J.3.3 - FEMP Safety Requirements.

C.4.8.4.5 Payment of Overtime and Labor Hours in Excess of Authorized Hours

Overtime or other additional hours including those of additional personnel, not included in the approved workforce utilization plan shall be at the subcontractor's cost, as discussed in Section H, Clause H.60.

C.4.8.5 Labor Issues Roadmap

FERMCO has supplied Figure C.4.8-8, Labor Issues Roadmap, to assist the subcontractor in identifying CBA & PLA articles addressing various labor issues. This roadmap does not relieve the subcontractor of its responsibility to read and understand the CBA between FERMCO and the FAT&LC (see Attachment J.4.7) and the PLA between FERMCO and the GCBCTC (see Attachment J.4.8).

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FIGURE C.4.7-1

SUPPLIER SUBMITTAL

WORK ORDER NO.: (1)	SUBCONTRACT NO.: (2)	SUPPLIER SUBMITTAL NO.: (3)	DATE: (4)

FROM: (5)

SIGNATURE:_____ DATE:_____

TO: FERMCO SUBCONTRACT ADMINSTRATOR, MS52-1, T76 (14)

RECEIVED BY:_____ DATE:_____

(6) QTY	(7) DOCUMENT NUMBER	(8) REV	(9) DOCUMENT FAMILY											(10) RESUBMITTAL		(11) TITLE/DESCRIPTION	(12) SUBMITTAL ACTION					(13) ASSOCIATED SPECIFICATION	(15) SUPPLIER ACTION			
			CON	D&D	DEMP	ENG	H&H	OPS	PERS	PROC	PROJ	QAQC	SITP	YES	NO		CnFR	FERCmpR	FDECmpR	INF	REC		A	B	C	D

REMARKS: (16)

DOCUMENT FAMILY CODE: (BY SUPPLIER)

CON - CONSTRUCTION
D&D - DECONTAMINATION & DISMANTLEMENT
DEMP - DEMOBILIZATION
ENG - ENGINEERING
H&H - HEALTH & SAFETY
OPS - OPERATIONS
PERS - PERSONNEL
PROC - PROCUREMENT
PROJ - PROJECT (GENERAL)
QAQC - QUALITY ASSURANCE/ QUALITY CONTROL
SITP - SITE PREPARATION

✓ APPROPRIATE DOCUMENT FAMILY ABOVE

SUBMITTAL ACTION CODE: (BY SUPPLIER)

CnFR - CONFORMANCE REVIEW
FERCmpR - FERMCO COMPLIANCE REVIEW
F/D/ECmpR - FERMOC/DOE/EPA COMPLIANCE REVIEW
INF - INFORMATION FOR RECORD
REC - CERTIFIED RECORD

✓ APPROPRIATE SUBMITTAL ACTION ABOVE

SUPPLIER ACTION CODE: (FERMCO)

A - FINAL DOCUMENTS: CONFORMS WITH REQUIREMENTS
B - MINOR/NO COMMENTS: SUBMIT AS FINAL, INF OR REC
C - REVISE AND RESUBMIT
D - FOR INF/REC DOCUMENTS: CONFORMS WITH REQUIREMENTS

✓ APPROPRIATE SUPPLIER ACTION ABOVE

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INSTRUCTIONS FOR COMPLETING THE SUPPLIER SUBMITTAL:

Supplier Submittal Originator

1. Enter the work order number associated with the documents being submitted. If not applicable, enter "N/A".
2. Enter the subcontract number associated with the documents being submitted. If not applicable, enter "N/A".
3. Enter unique submittal tracking number.
4. Enter the date the submittal was prepared.
5. Enter name and address of the organization submitting the documents and signature of the individual preparing the submittal.
6. Enter the quantity of each document being submitted.
7. Enter unique identification number for each document.
8. Enter the revision level (number, letter, date) of each document.
9. Enter a checkmark in the appropriate document family column for each document.
10. Enter a checkmark in the YES column if the document listed was previously submitted; if not, enter a checkmark in the NO column.
11. Enter the title and/or a brief description for each document.
12. Enter a checkmark in the appropriate SUBMITTAL ACTION column for each document that identifies the type of document and the action to be taken by FERMCO.
13. Enter a reference to the section of the subcontract to which this document pertains.

FERMCO

14. Enter signature of the individual that verifies documents listed on the submittal are received and annotate any discrepancies in the REMARKS section and the date that these actions were completed.
15. Enter a checkmark in the appropriate SUPPLIER ACTION column for each document that corresponds with the status code checked on the label signed by the Review Coordinator and attached to each document.
16. Enter identification/description of documents listed on the submittal that were not received; documents received but not listed on the submittal; discrepancies in quantity, revision, etc.; information concerning the documents such as suitability for copying; and any other comments deemed necessary and applicable to the submittal.

Figure C.4.7-2

DELIVERABLES/SUBMITTALS REQUIREMENTS FORM

DOCUMENT TYPE CODE:

FERCmpR...FERMCO Compliance Review
F/D/ECmpR...FERMCO/DOE/EPA Compliance Review
CnfR...Conformance Review
INF...Information for Record
REC...Certified Record

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DOCUMENTATION REQUIREMENTS

DOCUMENT FAMILY	DOCUMENT TYPE	DOCUMENT TITLE	DOCUMENT REQUIRED		REFERENCE
			Week Due, After Award	Other Requirements	
Project - General	CnfR	Invoice	Monthly	-	Section G.2
	F/D/ECmpR	Detailed Pre-Operational Schedule	Week 5	-	Section C.4.6.2
	INF	Four Week Rolling Schedule	Weekly	-	Section C.4.6.5
	INF	Monthly Cost Plan	Monthly	-	Section C.4.6.9
	INF	Daily Reports	Daily	-	Special Req. H.17
	CnfR	Submittal Register	Week 5	-	Section C.4.7.6
	FERCmpR	Labor Relations Plan	Week 8	-	Section C.4.8
	FERCmpR	Work Force Utilization Plan	Week 8	-	Section C.4.8
Procurement	CnfR	Bonds	Week 2	-	Special Req. H.52
	CnfR	Insurance	Week 2	F	Gen. Provision A.44
	CnfR	Form SF 1413	Week 2	F	Special Req. H.44
	CnfR	PLA Letter	Week 5	-	Special Req. H.31
	CnfR	Subcontracting Plan/Subcontract List	-	N	Gen. Provision F.1
	CnfR	Laboratory Utilization Plan	Week 37	M	Gen. Provision A.36
Personnel - Access	INF	Access Request & Profile Form	-	C	Attach. J.3.3
	INF	Employee Close-Out Checklist	-	O	Special Req. H.23
Personnel - Training	INF	Training Certificates	-	D	Attach. J.3.3, Section J.3.3.3
	REC	OSHA 24-Hour Field Experience Forms	-	E	Attach. J.3.3, Section J.3.3.3
	INF	OSHA Construction 30 Hour Training	-	A	Attach. J.3.3, Section J.3.3.3
Personnel - Medical	INF	Medical Monitoring	-	B	Attach. J.3.3, Section J.3.3.1
	INF	Urinalysis Sampling Form	Monthly	-	Attach. J.3.3, Section J.3.3.1
	INF	Bioassay Form	Bi-Monthly	-	Attach. J.3.3, Section J.3.3.1
	INF	Authorization for use of Respiratory Protection	-	H	Attach. J.3.3, Section J.3.3.1

Figure C.4.7-2

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DOCUMENTATION REQUIREMENTS

DOCUMENT FAMILY	DOCUMENT TYPE	DOCUMENT TITLE	DOCUMENT REQUIRED		REFERENCE
			Week Due, After Award	Other Requirements	
Health & Safety	FERCmpR	Safety and Health Program, including:	Week 6	-	Attach. J.3.3, Section J.3.3.2
		• S&H Representative Qualifications;			Section J.3.3.2.1.1
		• Competent Person List;			Section J.3.3.2.1.2
		• Accident Prevention Plan;			Section J.3.3.2.3
		• Respirator Program;			Section J.3.3.2.6
		• Heat & Cold Stress Program;			Section J.3.3.2.7
		• Substance Abuse Program; and			Section J.3.3.2.14
		• Fall Protection Plan			Section J.3.3.2.15
	INF	MSDS Documentation	-	J	Gen. Provision A.11
	INF	Subcontractor Manpower Report	Monthly	-	Attach. J.3.3, Section J.3.3.1.7
	CnfR	Radiation Source Accountability & Control Form	-	I	Attach. J.3.3, Section J.3.3.1.5
		Subcontractor's Health & Safety Plans for:			Attach. J.3.3; and Gen. Provision A.37
	F/D/ECmpR	• Site Preparation and Remediation Facility Construction Activities	Week 14	-	J.3.3, GP A.37, and Section C.5.2.3.3
	F/D/ECmpR	• Remedial Action Operations Activities	Week 37	-	J.3.3, GP A.37, and Sect. C.6.3.2
	REC	Hoisting Log	-	K	Attach. J.3.3
	REC	Trenching & Excavating Inspection Forms	-	K	Attach. J.3.3

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Figure C.4.7-2

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DOCUMENTATION REQUIREMENTS

DOCUMENT FAMILY	DOCUMENT TYPE	DOCUMENT TITLE	DOCUMENT REQUIRED		REFERENCE
			Week Due, After Award	Other Requirements	
QA/QC	FERCmpR	Quality Assurance Plan	Week 7	-	Attach. J.3.5
	CnfR	Schedule of Audits	Week 11	M	Attach. J.3.5
	CnfR	Schedule of Surveillances	Week 11	N	Attach. J.3.5
	CnfR	Schedule of Inspections	Week 11	N	Attach. J.3.5
	REC	Fastener Quality Certificates	-	P	Special Req. H.29
Engineering	F/D/ECmpR	Plant Facilities Engineering Package	Week 14	-	Section C.5.1.3.1
		• Description of the Subcontractors Operation and Processes			Sect C.5.1.3.1.a
		• Design Criteria and Assumptions			Sect C.5.1.3.1.b
		• Process Flow Diagram(s) with a Mass and Energy Balance			Sect C.5.1.3.1.c
		• Site Plan(s)			Sect C.5.1.3.1.d
		• General Arrangement Plan(s)			Sect C.5.1.3.1.e
		• Equipment Data Sheets/Specifications			Sect C.5.1.3.1.f
	F/D/ECmpR	Environmental Investigation/Engineering Study Work Plan	-	L	Section C.5.1.3.2
Site Preparation	F/D/ECmpR	Site Preparation Package	Week 14	-	Sect C.5.2.3.1
		• Site Plan			Sect C.5.2.3.1.a
		• Underground Utility Plan			Sect C.5.2.3.1.b
		• Grading Plan			Sect C.5.2.3.1.c
		• Associated Profiles and Details			Sect C.5.2.3.1.d
		• Specifications			Sect C.5.2.3.1.e
		• Manufacturers Fabrication Drawings of Portable			Sect C.5.2.3.1.f
	F/D/ECmpR	Pre-Operational Environmental Control Plan	Week 14	-	Section C.5.2.3.2

Figure C.4.7-2

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DOCUMENTATION REQUIREMENTS

DOCUMENT FAMILY	DOCUMENT TYPE	DOCUMENT TITLE	DOCUMENT REQUIRED		REFERENCE
			Week Due, After Award	Other Requirements	
Construction	CnfR	Certified for Construction Package	Week 26	-	Section C.5.3.3.1
		• Process Design			Sect C.5.3.3.1.a
		• Civil Design			Sect C.5.3.3.1.b
		• Structural Design			Sect C.5.3.3.1.c
		• Mechanical Design			Sect C.5.3.3.1.d
		• Piping Design			Sect C.5.3.3.1.e
		• Electrical Design			Sect C.5.3.3.1.f
		• Instrumentation and Controls Design			Sect C.5.3.3.1.g
		• Construction Specifications			Sect C.5.3.3.1.h
	CnfR	Construction Safe Work Plan	Week 18	-	Sect C.5.3.3.4
	CnfR	Construction Acceptance Tests Plan	Week 11	-	Sect C.5.3.3.2
Operations		Operations and Maintenance Work Package			
	F/D/ECmpR	• Operation & Maintenance Plan (Phase I - Existing Facilities)	Week 14	-	Section C.6.3.1.1
	F/D/ECmpR	• Operation & Maintenance Plan (Phase II - Remediation Facilities)	Week 37	-	Section C.6.3.1.1
	CnfR	• Operations Procedures	Week 45	-	Section C.6.3.1.2
	F/D/ECmpR	• Operations Environmental Control Plan	Week 37	-	Section C.6.3.1.5
	F/D/ECmpR	• Sampling & Analysis Plan	Week 37	-	Section C.6.3.1.4
	F/D/ECmpR	• Excavation Plan	Week 14	-	Section C.6.3.1.6
	CnfR	• Inspections & Periodic Maintenance Plan	Week 45	-	Section C.6.3.1.7
	INF	• Environmental Monitoring Data	-	As collected	Section C.6.3.1.9

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Figure C.4.7-2

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DOCUMENTATION REQUIREMENTS

DOCUMENT FAMILY	DOCUMENT TYPE	DOCUMENT TITLE	DOCUMENT REQUIRED		REFERENCE
			Week Due, After Award	Other Requirements	
Operations (Continued)	INF	• Operating Plans Crosswalk	-	N	Section C.6.3.1.3
	CnfR	Training Plan	Week 45	-	Section C.5.4.3.2
	CnfR	Operations Safe Work Plan	Week 49	-	Attach. J.3.3
		Conduct of Operations (CONOPs)			
	CnfR	• Standing Orders	Week 45	-	Section C.5.4.3.1
	CnfR	• Training Program	Week 45	-	Section C.5.4.3.2
	CnfR	• Standard Operating Procedures	Week 45	-	Section C.5.4.3.2
	CnfR	System Start-Up: Proof & Process Test Plan	Week 45	-	Section C.5.4.3.3
	INF	Detailed Operations Schedule	Monthly	-	Section C.4.6.3
		Safety Assessment, including			Attach. J.3.2
	CnfR	• 60% Implementation Plan	Week 5	-	Attach. J.3.2
	CnfR	• Final Implementation Plan	Week 9	-	Attach. J.3.2
	CnfR	• Issue Implementation Plan	Week 10	-	Attach. J.3.2
	CnfR	• Outline PHA	Week 7	-	Attach. J.3.2
	CnfR	• 60% PHA	Week 12	-	Attach. J.3.2
	CnfR	• Final PHA	Week 18	-	Attach. J.3.2
	CnfR	• Issue PHA	Week 20	-	Attach. J.3.2
	CnfR	• Outline HazCat	Week 11	-	Attach. J.3.2
	CnfR	• 60% HazCat	Week 17	-	Attach. J.3.2
	CnfR	• Final HazCat	Week 23	-	Attach. J.3.2
	CnfR	• Issue HazCat	Week 25	-	Attach. J.3.2
	CnfR	• Outline Safety Analysis	Week 10	-	Attach. J.3.2
	CnfR	• 60% Safety Analysis	Week 18	-	Attach. J.3.2
	CnfR	• Final Safety Analysis	Week 24	-	Attach. J.3.2
	CnfR	• Issue Safety Analysis	Week 26	-	Attach. J.3.2
Decontamination Dismantlement	INF	D&D detailed schedule	Monthly	-	Section C.4.6.4
	F/D/ECmpR	D&D Implementation Plan	-	L	Section C.7.1.1
	CnfR	D&D Safe Work Plan	-	G	Section C.7.1.1

Figure C.4.7-2

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DOCUMENTATION REQUIREMENTS

DOCUMENT FAMILY	DOCUMENT TYPE	DOCUMENT TITLE	DOCUMENT REQUIRED		REFERENCE
			Week Due, After Award	Other Requirements	
Demobilization	INF	As-Built Drawings	-	P	Special Req. H.23
	CnfR	Project Close-Out Checklist	-	P	Special Req. H.23

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Figure C.4.7-2

Document Code Types are defined as follows:

FERMCO Compliance Review Submittals - Documents required of the subcontractor to be submitted for review, comment, and approval by FERMCO. The review is to verify compliance with the contract and specifications requirements. If the document is deemed incomplete and/or if changes are necessary to otherwise address comments, further submittals of the document may be necessary. Formal approval is necessary from FERMCO before subcontractor initiation of activities covered by these documents.

FERMCO/DOE/EPA Compliance Review Submittals - Documents required of the subcontractor to be submitted for review, comment, and approval by FERMCO, DOE, and the EPAs. The review is to verify compliance with the contract and specifications requirements. If the document is deemed incomplete and/or if changes are necessary to otherwise address comments, further submittals of the document may be necessary. Formal approval is necessary from FERMCO, DOE, and the EPAs before subcontractor initiation of activities covered by these documents.

Conformance Review Submittals - Documents required of the subcontractor to be submitted for review and comment by FERMCO. The review is to verify compliance with the contract and specifications requirements. Formal approval of these documents should not be expected (i.e., approval of such a submittal is implicit unless otherwise noted by FERMCO within the 14-day FERMCO review period). If the document is deemed incomplete and/or if changes are necessary to otherwise address comments, further submittals of the document may be necessary.

Information for Record Submittals - Documents required by the subcontract to be submitted for information only and, if the documents and their contents are correct, require no comments or further resubmittal.

Certified Record Submittals - Documents such as material certifications, welder certifications, and test reports, which, if their contents are correct/complete, require no comments or further resubmittal.

FIGURE C.4.8-1

Fernald Atomic Trades & Labor Council (FAT&LC)

Union	Local Number	Job Titles
Bricklayers	18	Masons
Carpenters/Joiners	2380	Millwright
Chemical Workers	501	HazWat
Electricians	1825	Instrument Mechanic
Firemen & Oilers	7	Boiler Operator
		Boiler Operator Helper
		Oiler
Service Employees	1199	Porters/Maintenance
		Laborers
Laundry Workers	248	Dry Cleaner
Machinists	1901	Industrial Mechanic
Operating Engineers	20	Stationary Engineer
		Water Plant Operator
		Asst. Water Plant Operator
		Bulldozer Operator
		Pump Operator
		Waste Water Plant Operator
		Heavy Equipment Operator
Paperhangers	308	Painters
Plumbers & Gas Fitters	59	Pipefitter
		Welder
Teamsters	100	Motor Vehicle Operator
		Storeroom Attendant
		Laborer (Transportation)
		Quality Assurance Checker

Greater Cincinnati Building and Construction Trades Council (GCBCTC) Unions

Union	Local Number
Asbestos Workers	8
Boilermakers	105
Bricklayers	18
Carpenters	District Council
Cement Masons	524
Electricians	212
Glaziers	387
Iron Workers (Structural)	44
Iron Workers (Rebar)	372
Laborers	265
Lathers	47-L
Millwrights	1066
Painters	12
Pipe Fitters	392
Plasterers	1
Plumbers & Gas Fitters	59
Roofers	42
Sheet Metal	24
Sprinkler Fitters	669
Teamsters	100

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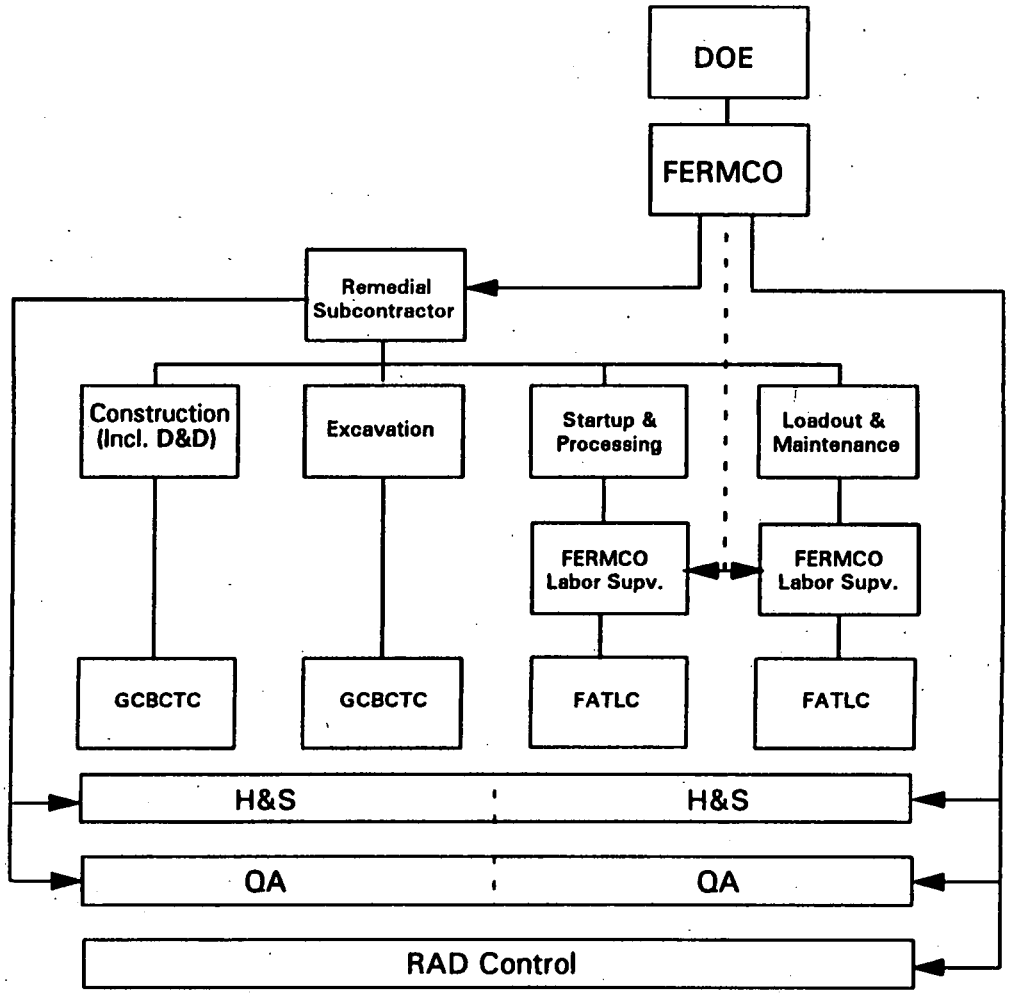
FIGURE C.4.8-2

Project Organization - WPRAP Remediation



Key

DOE	Department of Energy
GCBCTC	Greater Cincinnati Building & Construction Trades Council
FATLC	Fernald Atomic Trades & Labor Council
FERMCO	Fernald Environmental Restoration Management Corporation
RSO	Remedial Site Operations
QA	Quality Assurance
H&S	Health & Safety

FIGURE C.4.8-3

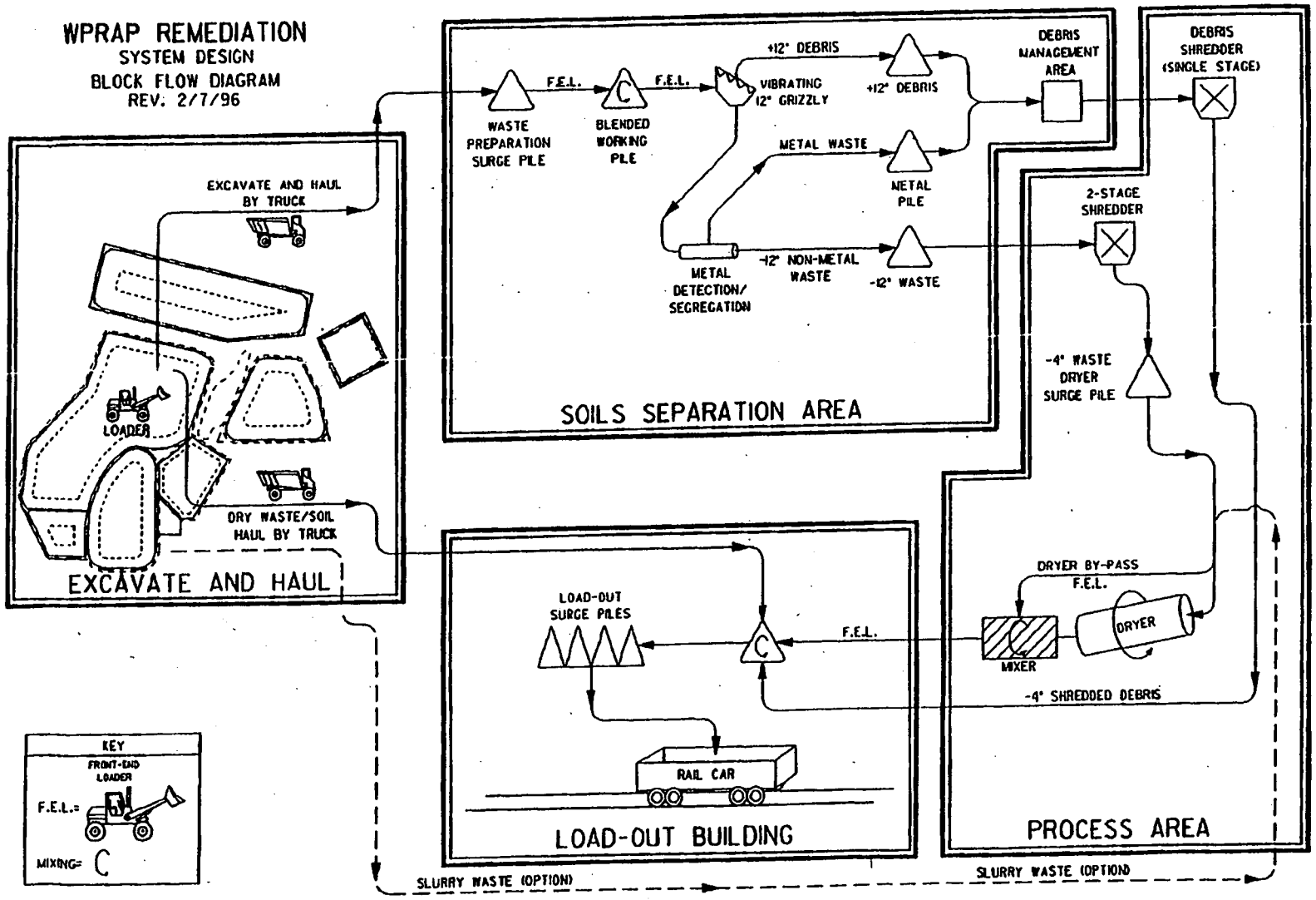


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FIGURE C.4.8-4

WPRAP REMEDIATION WORK ALLOCATION

To ensure compliance with the Project Labor Agreement (PLA) and with the Greater Cincinnati Building and Construction Trades Council (GCBCTC) and the Collective Bargaining Agreement (CBA) with the Fernald Atomic Trades and Labor Council (FAT&LC), work to be performed for the remedial waste treatment and disposal of the WPRAP will be as follows:

GCBCTC

- Construction of the remediation facility
- Installation of process equipment
- Excavation of the waste pits
- Separation and segregation of the debris and waste
- Placement of debris and waste in stock piles

FAT&LC

- Removing the segregated waste from stock piles
- Loading the waste into shredders
- Operation of thermal drying units
- Mixing and blending the processed waste to meet the WAC for the disposal facility
- Railcar preparation (including installing liners and lids)
- Loading of the waste into FERMCO supplied railcars
- Decontamination of the railcars
- Preparation of the shipping manifest
- Maintenance of all process equipment and material handling equipment

FIGURE C.4.8-5
WORKFORCE UTILIZATION PLAN

Excavate/Haul					
Subcontractor Job Description	Wage Description Position	Shifts			
		1	2	3	4
		No. Employees	No. Employees	No. Employees	No. Employees
Operators					
Teamsters					
Laborers					
Foreman					

Soil Separation					
Subcontractor Job Description	Wage Description Position	Shifts			
		1	2	3	4
		No. Employees	No. Employees	No. Employees	No. Employees
Operators					
Teamsters					
Laborers					
Foreman					

Dryer Operations					
Subcontractor Job Description	Wage Description Position	Shifts			
		1	2	3	4
		No. Employees	No. Employees	No. Employees	No. Employees
Operators					
Teamsters					
Laborers					
Foreman					

Debris Shredder					
Subcontractor Job Description	Wage Description Position	Shifts			
		1	2	3	4
		No. Employees	No. Employees	No. Employees	No. Employees
Operators					
Teamsters					
Laborers					
Foreman					

Loadout					
Subcontractor Job Description	Wage Description Position	Shifts			
		1	2	3	4
		No. Employees	No. Employees	No. Employees	No. Employees
Operators					
Teamsters					
Laborers					
Foreman					

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FIGURE C.4.8-6

JOB DESCRIPTION FERMCO OPERATIONS AREA SUPERVISOR

I. Job Description FERMCO Operations Area Supervisor

Responsible for the supervision, coordination, and scheduling of the work activity of an assigned craft within the project construction effort.

Monitors construction activities to ensure adherence to safety and quality standards, and to achieve work efficiency.

BA/BS degree in a related field plus seven (7) years related experience to include two (2) years supervisory experience.

Duties:

Schedules work activities and manpower requirements to meet required completion dates. Coordinates craft personnel, material, and equipment to meet schedules while adhering to budget constraints.

Reviews work assignments with craft supervisors and gives instruction relative to method, procedures and desired results.

Monitors work activities to ensure that craft personnel adhere to project safety standards. Monitors construction activities to ensure work efficiency and to ensure that quality and workmanship meet project standards and specifications.

Maintains knowledge of safety policies and procedures, and performs assigned duties in a safe manner; and, while supervising others, has responsibility for the safety of those being supervised and ensures they comply with established safety policies and procedures, and practice safe work habits.

FIGURE C.4.8-7

JOB DESCRIPTION FOR FERMCO OPERATIONS SUPERVISOR

II. Job Description FERMCO Operations Supervisor

Responsible for the supervision, coordination, and scheduling of the work activity of an assigned craft within the project construction effort.

Monitors construction activities to ensure adherence to safety and quality standards, and to achieve work efficiency.

BA/BS degree in a related field plus five (5) years related experience to include two (2) years supervisory responsibility.

Duties:

Schedules work activities and manpower requirements to meet required completion dates. Coordinates craft personnel, material, and equipment to meet schedules while adhering to budget constraints.

Reviews work assignments with craft supervisors and gives instruction relative to method, procedures and desired results.

Monitors work activities to ensure that craft personnel adhere to project safety standards. Monitors construction activities to ensure work efficiency and to ensure that quality and workmanship meet project standards and specifications.

Maintains knowledge of safety policies and procedures, and performs assigned duties in a safe manner; and, while supervising others, has responsibility for the safety of those being supervised and ensures they comply with established safety policies and procedures, and practice safe work habits.

FIGURE C.4.8-8

LABOR ISSUES ROADMAP

ISSUES	FAT&LC-CBA	GCBCTC-PLA
Health & Safety Oversight	Article IV, Safety & Health	Article XIV, Safety & Health
Role in Staffing	Article III - Stability of Employment Section 3-2 - Assignment of Work Section 3-3 - Training	Article VII - Management Rights
Employee Replacement	Article XVII - Promotions, Transfers, and Temporary Assignments Section 17-4 - Assignment Vacancies Section 17-5 - Classification Vacancies Section 17-6 - Eligibility Section 17-7 - Procedure Section 17-8 - Qualifying Period	Article III - Employment
Dispute Resolution Article IV, Safety & Health, Section 4-3, Disagreement, etc.	Article VIII - Grievance Procedure and Arbitration Article VII - Work Stoppages, Lockouts Section 7-1 - Dispute Resolution Procedure	Article IX - Grievance Procedure and Arbitration
Work Hours	Article XV - Shifts and Premium Pay	Article XI - Hours of Work, Overtime and Shifts
Worker's Group	FERMCO's Responsibility	Employer's Responsibility
Holidays/Vacation	Article XI - Paid and Unpaid Time Off	Article XII and Appendix A
Wages	Appendix A	Appendix A
Discipline	Article V - "Management Rights"	Article XIII - Working Conditions, Section 13-2, HR 145

SECTION C.5

PRE-OPERATIONAL PHASE TECHNICAL REQUIREMENTS

This section provides the technical requirements for the Pre-Operational Phase of the project as defined in Section C.3.2.1. The Pre-Operational Phase includes: process design (Section C.5.1), site preparation (Section C.5.2), facility construction (Section C.5.3) and pre-operational programmatic activities (Section C.5.4). Submittals to be provided by the subcontractor in addressing these activities are identified in Sections C.5.1.3, C.5.2.3, C.5.3.3, and C.5.3.4.

C.5.1 PROCESS DESIGN

This section contains the performance basis, technical requirements, and submittals associated with design of the subcontractor's remediation system. The term "Process Design" refers to the first phase of design (similar to Title 1 or 30 percent design). The process design is intended to provide sufficient information to support the final phase of design, referred to in Section C.5.3 as the Certified for Construction Package, and development of the Plant Facilities Engineering Package which is the primary element of the Draft Design Package that is submitted to the EPAs.

C.5.1.1 Section Includes

a. Summary of Design Basis

b. Solid Waste and Contaminated Soil Acceptance Criteria

c. Wastewater and Stormwater Acceptance Criteria

d. Air Emission Limits

e. Applicable or Relevant and Appropriate Requirements (ARARs)

f. Substantive Permitting Requirements

g. As Low As Reasonably Achievable (ALARA) Requirements

h. Environmental Investigations and Engineering Studies (if necessary)

i. Surveying

j. Geotechnical Investigations

C.5.1.2 Technical Requirements for Process Design

C.5.1.2.1 Summary of Design Basis

The subcontractor's process design shall incorporate the design criteria summarized in Table C.5-1 and described in this and other sections of this subcontract and with the ARARs

TABLE C.5-1

SUMMARY OF DESIGN BASIS/CRITERIA

Item	Criteria	Description	References	
1	Minimum Required Process Operations	1-1 Excavation 1-2 Pretreatment 1-3 Thermal Drying 1-4 Load-out into railcars 1-5 Demolition and Disposal of Subcontractor-owned Facilities	1. Final Record of Decision for Remedial Actions at Operable Unit 1, 1/95	
2	Number of Years of Operation	Approximately 6.5 years	2. FERMCO Sitewide Accelerated Remediation Plan	
3	Maximum Days per Year of Operation	365 days		
4	Maximum Hours/Day of Operation	24 hours		
5	Waste Material to be Processed	5-1 OU1 Waste Pits 1, 2, 3, 4, 5, 6, Clearwell, and Burnpit (including waste pit caps, contents, and liners and contaminated soil below the pits) 5-2 Contaminated soil from other OUs		
6	As-built dimensions and features of the OU1 Waste Pits	The as-built dimensions and features of the waste pits are defined on Figures C.5-1 and C.5-2	3. FERMCO CERCLA/RCRA Units Waste Information Manual, 10/95, FERMCO. 4. Remedial Investigation Report for Operable Unit 1 (RI), 8/94, FERMCO. 5. Feasibility Study Report for Operable Unit 1 - DOE/EA-0938 (FS), 10/94, FERMCO.	
7	Estimated volume of Material to be Excavated, Processed, and disposed of (In-situ volumes).	7-1 Phase I - Neat-line Excavation Waste (including caps and liners) (Figure C.5-3) 7-2 Phase II - Directed Excavation Contaminated soil below pit liners (assuming 3 feet) (Figure C.5-3) 7-3 Contaminated soil from other OUs (processed and loaded only) **Total**	628,200 cubic yards 83,640 cubic yards 25,000 cubic yards **736,840** cubic yards	6. FERMCO CERCLA/RCRA Units Waste Information Manual (Most accurate and up-to-date source) 7. RI (Secondary source) 8. FS (Secondary source)

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TABLE C.5-1 (Cont'd)

SUMMARY OF DESIGN BASIS/CRITERIA

Item	Criteria	Description	References
8	Estimated tonnage of material that will be loaded into railcars for shipment to the PCDF.	The tonnages of waste and soil presented below are only estimates based on in-situ conditions and assumed fluffing factors and final moisture contents. 8-1 Waste (including caps and liners) 456,600 tons 8-2 Contaminated soil below pits (assuming 1.5-feet deep) 79,500 tons 8-3 Contaminated soil from other OUs 38,000 tons **Subtotal to PCDF** 574,100 tons	9. Technical Summary of DEEP Test Data (DEEP), Operable Unit 1, Project Order 145, 3/96, Rev. 0, FERMCO Subcontract No. 2-21487. 10. Section B of this subcontract.
	Estimated tonnage of material that will be loaded into containers and disposed of in the OSDF	8-4 Contaminated soil below pits (assuming an additional 1.5-feet below the soil in item 8-2). 79,500 tons **TOTAL to PCDF and OSDF** **653,600 tons**	
9	Average In-situ Moisture Content	To be determined by the subcontractor based on existing waste pit data or new data generated from testing conducted by the subcontractor. For FERMCO estimate see Table J.2-2 in Attachment J.2.	11. RI 12. DEEP. (Most comprehensive and up-to-date source) 13. Geotechnical Evaluation of Material Properties of Waste Pit Materials at the Feed Materials Production Center, 3/88, Roy F. Weston, DOC G-000-105.15. 14. Cooperative Remedy Screening Program Final Report (CRSP), 7/94, University of Cincinnati - Alter, DOC. CRSP-A0-8.
10	Moisture Content of Waste to be Processed (as delivered to treatment system)	To be determined by the subcontractor based on existing waste pit data and the solids recovery of the selected excavation technique.	15. DEEP, Appendix I
11	Other Physical Characteristics of Pit Waste (i.e., Specific gravity, unified soil classification, and particle size distribution.)	The adequacy of this data to support design of the subcontractor's remediation system shall be determined by the subcontractor prior to initiating design.	16. DEEP 17. Geotechnical Evaluation of Material Properties at the Feed Materials Production Center. 18. CRSP

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TABLE C.5-1 (Cont'd)

SUMMARY OF DESIGN BASIS/CRITERIA

Item	Criteria	Description	References
12	Radiological and Chemical Properties of Waste and Debris Content	The adequacy of this data to support design of the subcontractor's remediation system shall be determined by the subcontractor prior to initiating design.	19. RI 20. Waste Pit Contents Study Report, 9/93, Parsons, FERMCO Subcontract No. 2-21487. 21. Waste Pit 6 Site Conditions, Operable Unit 1, Project Order 103, 6/94, Revision A.
13	Relevant Treatability Studies	Data and observations from these studies are provided for information only. The subcontractor is ultimately responsible for confirming or developing the information used as the basis of design.	22. DEEP 23. Report on Execution of the Surrogate Waste Drying Tests, 8/94, Parsons 24. Pit Waste Slurry Settling and Filtration Report, 1/96, FERMCO. 25. Shredder Engineering Test Report, PO 19, Task 221, 5/94, Parsons. 26. Flow Properties Test Report, 1994, DOC-943074, Jenike & Johanson, Inc. 27. Liquid Release Test Final Report, Surrogate and Composite Samples, 11/94, University of Cincinnati, DOC-CRSP-FO-060. 28. Cooperative Remedy Screening Program Interim Report, Thermogravinmetric Analysis of Seven Geotechnical Sample Groups, FERMCO 4/94, DOC CRSP-FO-060
14	Disposal Requirements for Construction and D&D Waste	15-1 Radiological Contamination Area - Construction waste shall be disposed of at NTS. 15-2 Construction waste from the Radiological Control Area is eligible for unrestricted release from the site if verified clean by FERMCO.	29. Section C.5.1.2.2.1, Construction and D&D Waste 30. Attachment J.4.3, Disposition of Construction Waste

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TABLE C.5-1 (Cont'd)

SUMMARY OF DESIGN BASIS/CRITERIA

Item	Criteria	Description	References
15	Treatment and Disposal Requirements for Pit Waste	All pit wastes, pit caps, and pit liners shall be treated to meet the disposal requirements of the PCDF.	31. Section C.5.1.2.2.2, Pit Waste 32. Attachment J.4.4, Permitted Commercial Disposal Facility Waste Acceptance Criteria
16	Treatment and Disposal Requirements for Contaminated Soil	Contaminated soil (soil having contamination levels above the Final Remediation levels) shall be disposed of at the PCDF.	33. Section C.5.1.2.2.3, Contaminated Soil 34. Attachment J.4.4, Permitted Commercial Disposal Facility Waste Acceptance Criteria
17	Air Emissions Criteria	Regulatory driven air emissions criteria - BAT for all air emissions except radon from point sources - 0.5 pCi/l total maximum allowable off-site impact of radon from point sources within the work area - Requirement for BAT or radon control will be determined by FERMCO using the subcontractor's uncontrolled emissions estimates and an integrated sitewide air model.	35. Section C.5.1.2.4, Air Emissions Limits 36. ARARs Tables - Attachment J.4.1
18	Wastewater and Stormwater Discharge	- 150 gpm maximum average daily discharge rate (all discharges) - 1000 ppm maximum total suspended solids - $\geq$ pH 10 for process water discharges to BSL	37. Section C.5.1.2.3, Wastewater and Stormwater Acceptance Criteria
19	Health and Safety Requirements	N/A	38. Attachment J.3.3, FEMP Safety Requirements 39. Attachment J.3.4, WPRAP Radiological Safety Requirements
20	Quality Assurance Requirements	N/A	40. Attachment J.3.5, Quality Assurance Requirements

TABLE C.5-1 (Cont'd)

SUMMARY OF DESIGN BASIS/CRITERIA

Item	Criteria	Description	References	
21	Hazard Category	Hazard category (HC) for WPRAP remediation activities: Less than HC-3, "Other Industrial Facility." Hazard categorization determines the documentation required to adequately assess the hazards associated with the activities planned.	41. Attachment J.3.2, Safety Basis Documentation 42. DOE-EM-STD-5502-94	
22	ALARA Requirements	ALARA is a process that has the objective of attaining radiological doses as far below controlling limits as possible.	43. Attachment J.3.4, Section J.3.4.2.1, ALARA Plans and Exposure Limits	
23	ARARs for Waste Pits Remedial Action Project	N/A	44. Section C.5.1.2.5 45. ARARs Tables - Attachment J.4.1	
24	Maximum Waste Production Rate (i.e., as loaded into railcars and shipped to PCDF)	Dried Waste Output/year 110,000 tons/year (years 2001 - 2003)	46. Section B of this subcontract 47. FERMCO Sitewide Accelerated Remediation Plan	
25	Railcar Loading Criteria	Maximum number of railcars loaded per day Maximum number of railcars available for loading during 1998-2000 Maximum number of railcars available for loading during 2001-2004 Maximum weight of material which can be loaded into a railcar Maximum volume of material which can be loaded into a railcar Railcars shall be loaded to meet either the maximum volume or maximum weight limit, whichever occurs first.	8 railcars/day 51 railcars every 21 days 60 railcars every 16 days 106.21 tons 103 cubic yards (no freeboard)	See C.6.2.10

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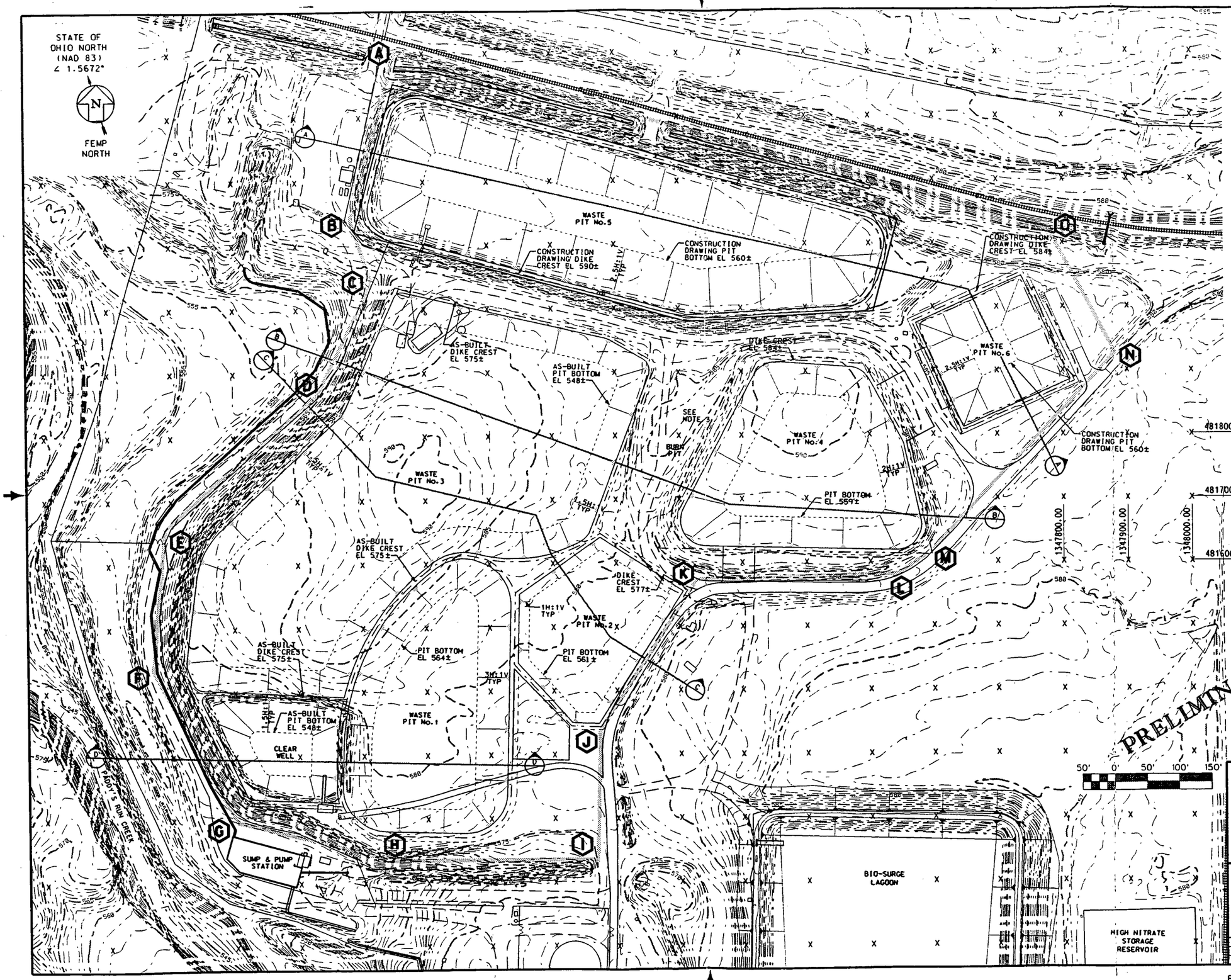

NOTES

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE PREPARED FROM FEMP SITE PROVIDED DATA FROM THE DOCUMENTS LISTED BELOW:

   EXISTING SITE DATA SOURCE (IN PLANT FILES)
   AERIAL TOPOGRAPHY, 1992
   FEMP CADD GRID/UTILITY DRAWINGS
   FEMP CONTRACTOR PROJECT DESIGN DOCUMENTS.

2. THE GEOMETRIC CONFIGURATIONS, THE LINER THICKNESSES, AND THE BOTTOM ELEVATIONS OF THE WASTE PITS WERE DETERMINED FROM THE BEST AVAILABLE DATA AT THIS TIME. THIS DATA WAS GATHERED FROM CONSTRUCTION, AS-BUILT, SURVEY, AND FEASIBILITY STUDY DRAWINGS (11/31/92, REV 11) AND FROM THE EXISTING PLANT ENGINEERING FILES.
   THE DIKE CREST SHOWN AROUND THE WASTE PITS REPRESENTS THOSE BUILT AT THE TIME OF CONSTRUCTION. MOST OF THE DIKES HAVE BEEN BURIED WITH COVER MATERIAL OF DIFFERENT THICKNESSES.

3. THE GEOMETRIC CONFIGURATION OF THE BURN PIT HAS BEEN DETERMINED FROM THE SITE AS-BUILT SURVEY OF THE BURN PIT DIKE. DEPTH AND SLOPES OF THE BURN PIT ARE NOT KNOWN.

SITE RESTORATION COORDINATES

STATE PLANAR (NAD83)

	EASTING	NORTHING
A	1346758.29	482405.43
B	1346684.10	482140.94
C	1346717.51	482042.54
D	1346630.35	481866.02
E	1346390.53	481657.41
F	1346369.85	481434.11
G	1346502.03	481197.09
H	1346745.14	481135.22
I	1347067.68	481135.03
J	1347073.29	481337.83
K	1347226.54	481572.73
L	1347543.67	481581.43
M	1347595.46	481615.46
N	1347880.70	481926.73
O	1347776.00	482126.21

LEGEND

- WASTE PIT AREA BOUNDARY
- PIT OUTLINE COVERED
- PIT OUTLINE DIKE
- PIT OUTLINE BOTTOM
- SLOPE
- MAJOR CONTOUR
- FENCE
- RAILROAD
- PAVED ROAD
- GRAVEL ROAD

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FOR CROSS SECTIONS SEE FIGURE C.5-2

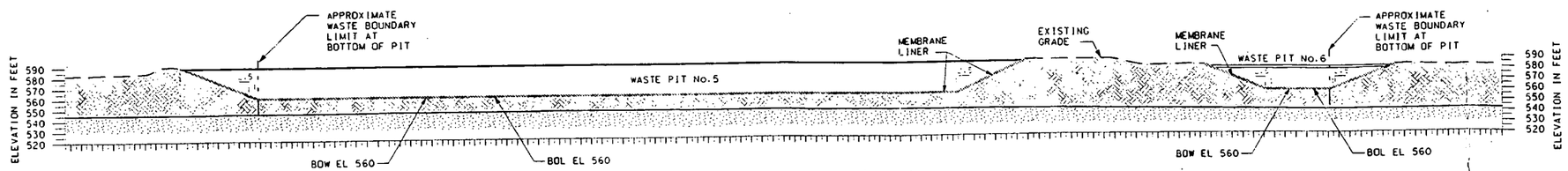
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
FERMCO
Fernald Environmental Management Project
U.S. DEPARTMENT OF ENERGY

WASTE PIT REMEDIAL ACTION PROJECT
WASTE PITS EXCAVATION LIMIT
SCALE: 1" = 150'-0"

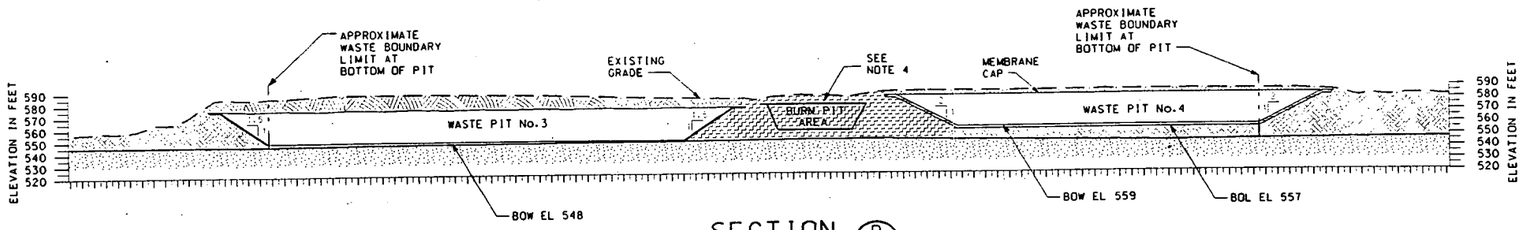
RES #2964
DATE 5/21/96
DRAWN S.J.SMOCK

FIGURE C.5-1

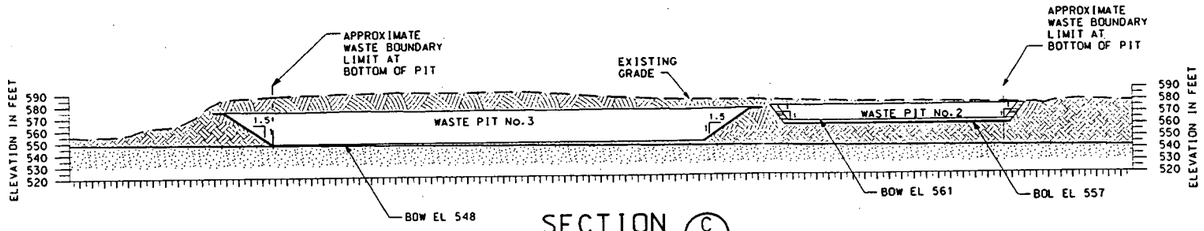
FILE NAME: /USR1/RES/RES2964/C5-1.DGN



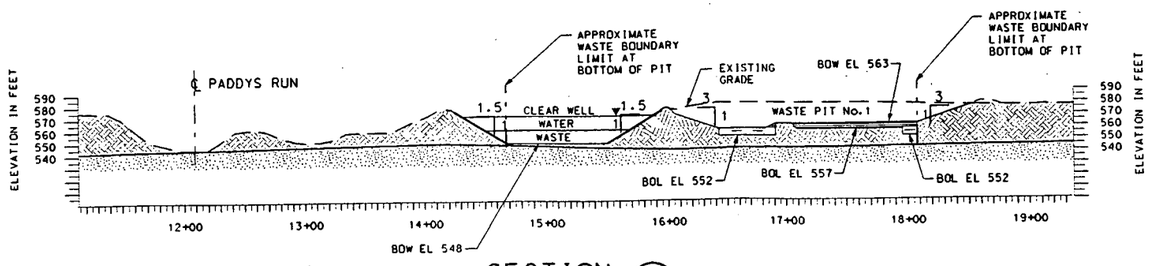
SECTION A
21A-5500-G-00248



SECTION B
21A-5500-G-00248



SECTION C
21A-5500-G-00248



SECTION D
21A-5500-G-00248

PRELIMINARY

NOTES:

1. [illegible]

2. [illegible]

3. [illegible]

4. BECAUSE OF INADEQUATE INFORMATION, THE BURN PIT AREA LOCATED BETWEEN WASTE PITS 3 AND 4 IS SHOWN AS SOIL MIXED WITH WASTE. SHAPE DENOTES GENERALIZED CONFIGURATION.

LEGEND

BOW	BOTTOM OF WASTE OR TOP OF LINER
BOL	BOTTOM OF LINER
	GLACIAL OVERBURDEN
	CLAY LINER
	FILL SOIL
	SAND AND/OR GRAVEL
	SOIL MIXED WITH WASTE
	WASTE

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0' 125'

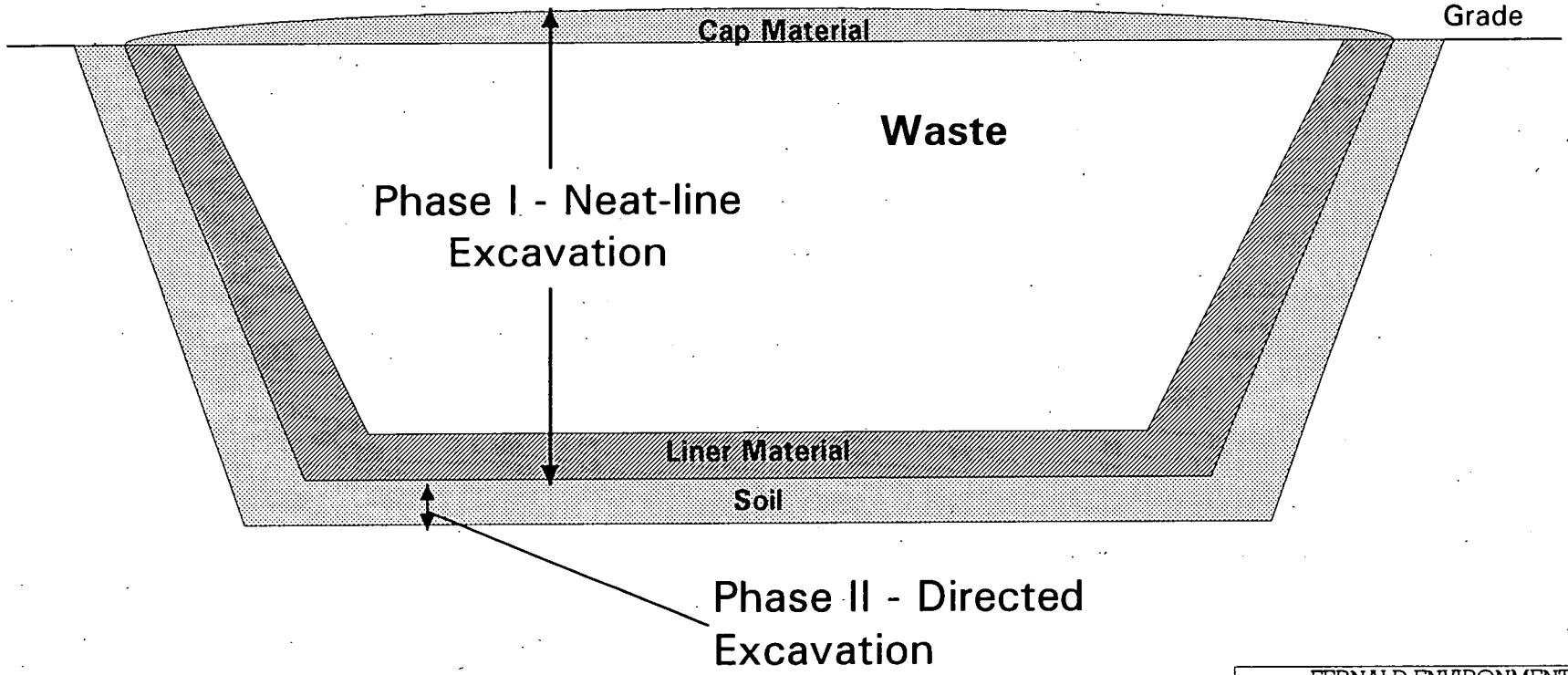
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
FERMCO
Fernald Environmental Management Project
U.S. DEPARTMENT OF ENERGY

WASTE PIT REMEDIAL ACTION PROJECT
WASTE PIT CROSS SECTIONS
SCALE: 1" = 125'-0"

RES #2964
DATE 5/21/98
DRAWN S.J.SMOCK

FIGURE C.5-2

FILE NAME: /USR1/RES/RES2964/C5-2.DGN



Notes:

Reference Figures C.5-1 and C.5-2

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

FERMCO FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

U.S. DEPARTMENT OF ENERGY

WASTE PIT REMEDIAL ACTION PROJECT

SCHEMATIC OF REPRESENTATIVE WASTE PIT EXCAVATION PHASES

RES
Date 6/3/96
Drawn D.E. Wilson

Figure C.5-3

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described in Attachment J.4.1. The subcontractor is ultimately responsible for development of the final design basis for the OU1 Remediation System.

FERMCO submitted a Pre-Final Design Package (approximately 90 percent design) to the USEPA and the Ohio EPA on March 20, 1996 for their review (Table J.2-6 in Attachment J.2 provides a listing of the contents of the Pre-Final Design Package and Attachment J.2.10.1 of that same Attachment summarizes the process description). The subcontractor may adopt any feature of the Pre-Final Design, contingent upon the understanding that the subcontractor is ultimately responsible for the design, construction, and performance of the remediation system for WPRAP as defined in this subcontract.

C.5.1.2.2 Solid Waste and Contaminated Soil Acceptance Criteria

Solid waste and soil generated from the construction and operation of the subcontractor's treatment system shall meet the acceptance criteria described below. Solid wastes include construction wastes, pit wastes, and contaminated soil.

C.5.1.2.2.1 Construction and D&D Waste

a. Any wastes generated during construction of the remedial facilities shall be dispositioned either as radiological waste or sanitary waste, depending on the area in which it was generated. Figure C.1-3 provides a figure delineating the subcontractor's work area, waste pit area, and process area. The subcontractor's work area is a radiological control area. Currently, there are three contamination areas within the waste pit area; Waste Pits 1, 2, 3, 4, Burnpit, and the Clearwell; Waste Pit 5; and Waste Pit 6 (see Attachment J.3.4). Once the process facility starts processing waste, the area where the processing facility sits will be designated as a contamination area. Attachment J.4.3, "Disposition of Construction Wastes" provides the resultant waste disposition for each radiological area, and removal procedures for sanitary wastes generated during construction activities.

b. Sanitary construction waste shall be disposed of using the containers specified in Attachment J.4.3.

c. Radiological construction waste shall be packaged in FERMCO provided containers per the following procedures:

4'x4'x7' White Metal Boxes	PT-0007, "Packaging Low Level Radioactive Waste in Metal Boxes for Shipment to the Nevada Test Site."
8'x8'x20' Top Loaded ISO	PT-0006, "Packaging Low Level Radioactive Waste in ISO Containers for Shipment to the Nevada Test Site."

d. The subcontractor is responsible for the following waste handling criteria: generation, size minimization (as necessary), segregating the waste by material type, and loading in containers. The segregation of wastes by type is based on potential

treatment and disposition options, and existing material management strategies, as well as the regulatory drivers for segregation and disposition of materials.

e. If the waste is found to contain holdup residual material, the subcontractor will be responsible for removing and drumming the holdup material. FERMCO will be responsible for visually inspecting the waste before it is removed from containment, and preparing containers for off-site/on-site disposition. NOTE: For the purpose of this document, a material fails visual inspection if: 1) it is visually verified that the material contains holdup material, or 2) the waste is found to be not segregated by material type. FERMCO will be responsible for ensuring that proper documentation is prepared for all packaged wastes. This documentation includes, but is not limited to, the Material Evaluation Form (MEF) verification, and the W-65 Card. Radiological wastes generated by the subcontractor will be charged at the rates specified in Section B.

f. Soils generated during construction excavation activities shall be stockpiled and utilized for blending during the processing of OU1 waste.

g. Design and construction of the subcontractor's remediation facility shall be done with conscientious attention to waste minimization. Note: the subcontractor will be charged for each box of construction and D&D waste generated by the subcontractor (Section B, Table B.2-2).

C.5.1.2.2.2 <u>Pit Waste</u>

a. Pit wastes are defined as; all capping materials, wastes contained within the pits, all wastes generated by processing (such as PPE, sludges, etc.) and all liner materials surrounding the waste pits. Per the OU1 ROD, all pit wastes require disposal at a PCDF.

b. The pit wastes shall be adequately size reduced/blended to form a product that has consistent physical, chemical, and radiological characteristics which meets the PCDF Waste Acceptance Criteria (WAC) specified in Attachment J.4.4, Permitted Commercial Disposal Facility Waste Acceptance Criteria. Sampling and analysis to certify attainment of the criteria must be performed at the rate and analysis methods specified in Section C.6.2.17.

c. Wastes that cannot be treated, either physically (debris) or chemically (RCRA wastes) by the subcontractor's remedial facilities to meet the PCDF WAC will be required to be loaded out by the subcontractor into boxes to be provided by FERMCO. The subcontractor will be provided either with the 4'x4'x7' white metal box or the 8'x8'x20' top loaded ISO container. All box loading operations shall be performed following FERMCO procedures identified in Item 1, iii above. (See Section C.6.2.13; non-typical waste stream for description of wastes that cannot be treated.) The pay items scheduled for these wastes are included in Section B of this subcontract.

C.5.1.2.2.3 Contaminated Soil

Contaminated soil is soil below the waste pit liners that has contamination levels above the Final Remediation Levels (FRLs) identified in the Remedial Design Work Plan for Remedial Actions at Operable Unit 1. These soils shall be excavated by the subcontractor under the direction of FERMCO (Section C.6.2.2, Excavation). The soil will be sampled by FERMCO, insitu where possible, to determine if the soil must be disposed of at the PCDF or the OSDF. The requirements for the soil to be disposed of at the PCDF will be the same as the pit waste. The PCDF WAC is provided in Attachment J.4.4. For soil destined to the OSDF, the subcontractor shall load the soil into roll-off boxes provided by FERMCO, remove any gross contamination from the boxes, and place them in a queuing area designated by FERMCO for pick-up by FERMCO.

C.5.1.2.3 Wastewater and Stormwater Acceptance Criteria

The following criteria apply to any and all wastewater and stormwater discharges generated as a result of the subcontractor remediation activities.

a. Wastewater or contaminated stormwater collected from the subcontractor's contaminated work areas shall be treated at the FEMP's Advanced Wastewater Treatment (AWWT) System prior to discharge to the Great Miami River. The FEMP NPDES permit governs the discharge from the FEMP wastewater treatment system.

b. Wastewater and contaminated stormwater shall be either transferred directly to the Biodenitrification Surge Lagoon (BSL) or indirectly via the Clearwell prior to entering the AWWT.

c. The maximum average daily discharges from the WPRAP remediation activities shall not exceed 150 gallons per minute.

d. Pretreatment to remove suspended solids shall be included in the subcontractor's wastewater and stormwater management plan. The maximum allowable concentration of suspended solids in the water (from any source) delivered to the BSL shall not be greater than 1000 ppm.

e. Process water (e.g., dryer off-gas condensate or scrubber bleed water) shall be subjected to pH adjustment ($\geq$ 10) to precipitate dissolved metals. The pH of the process water shall be between 6 and 10 prior to discharge to the BSL.

C.5.1.2.4 Air Emissions Limits

Remediation activities will produce fugitive and point source emissions of air contaminants. The excavation, waste transfer activities, and waste stockpiles will produce fugitive emissions, while the dryer will probably be the only source of point source emissions. Refer to Attachment J.4.1, ARARs and TBC Requirements Tables, and Attachment J.4.2, OU1 -

Substantive Permitting Cross-walk for a comprehensible list of the regulatory requirements for air emissions.

a. Employing Best Available Technology (BAT) will apply to all fugitive emissions as required by the Ohio EPA's permit to install and permit to operate. Point source emissions that exceed the maximum allowable ground level concentrations (MAGLC) at the site boundary must also apply BAT. Using BAT covers all toxic, particulate, and radiological emissions except radon emissions from point sources.

b. Radon emissions from the point sources shall meet a stack limit based on a maximum allowable off-site impact of 0.5 pCi/L annual average. The stack limit for radon will be determined by FERMCO, using a sitewide model and the subcontractor's data as discussed below.

c. Radionuclide emissions, excluding radon, shall meet 40 CFR 61, subpart H.

d. Personnel exposure limits and controls related to airborne contamination are defined in Attachment J.3.3, FEMP Safety Requirements.

Concentrations of air toxins, particulates, and radon in the dryer off-gas for the previous WPRAP Design/Build/Operate (DBO) concept (see Section J.2.10 of Attachment J.2) were determined by PARSONS utilizing the METSIM simulation software (Reference PARSONS Report, "Revised Off-Gas Composition Data and Radon Calculation," dated October 17, 1995). The DBO emission rates are shown as Worst Case Emission Rate in Table C.5-3. These data were then used by FERMCO to model FEMP site concentrations of these substances at specific receptor locations to determine which off-gas constituents require treatment prior to stack emissions. The specific stack configuration, off-gas volumes and velocities, that were assumed for the model are presented in Table C.5-2 below. The stack limits for individual compounds are presented in Table C.5-3, below. If, as a result of the subcontractor's design, any of the input variables change, the subcontractor shall provide his modified assumptions in order for FERMCO to perform an integrated air modeling to verify compliance with the 0.5 pCi/L radon limit referred to in item 2 above and to determine which (if any) emissions must be controlled using BAT.

TABLE C.5-2

Assumptions Dryer Off-Gas Stack FERMCO Site-wide Air Model	
Stack Height	60 feet
Stack Diameter	6 inches
Flow Rate	850 acfm
Exit Velocity	4,500 fpm
Ambient Temperature	67.7 degrees Fahrenheit
Stack Exit Temperature	95 degrees Fahrenheit

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TABLE C.5-3

Off-Gas Limits for Acid/Gas Dryer Off-Gas Stack FERMCO Site-wide Air Model			
Acid Emission	Stack Limit (lbs/hr)	MAGLC Value (mg/m^3)	Worst Case Emission Rate (lbs/hr)
Hydrogen Fluoride	1.42	0.026	1.0086
Hydrogen Chloride	4.09	0.075	0.0479
Nitric Acid	2.84	0.052	
Sulfuric Acid	0.55	0.01	
Ammonia	9.28	0.17	0.0
Nitrogen Dioxide	3.06	0.056	29.6784
Sulfur Dioxide	2.84	0.052	0.2219
Off-Gas Limits for Radon/Organic Emissions Dryer Off-Gas Stack FERMCO Site-wide Air Model			
Organic/Radon Emission	Stack Limit (lbs/hr)	MAGLC Value (mg/m^3)	Worst Case Emission Rate (lbs/hr)
Radon	1.9 E+8 pCi/sec	0.5 pCi/l	34,818.2 pCi/sec
Carbon Dioxide	4913.66	90.00	3.9501
1,1,1-Trichloroethane	1043.40	19.10	0.0316
1,1,2,2-Tetrachloroethane	3.82	0.07	3.72 E-04
1,1-Dichloroethane	221.29	4.05	0.0484
1,1-Dichloroethene	11.08	0.20	3.48 E-03
1,2-Dichloroethane	21.82	0.40	1.20 E-03
1,2-Dichloroethylene	431.88	7.91	2.40 E-03
1,4-Dioxane	49.30	0.90	0.23
2,4-Dinitrotoluene	0.082	0.0015	0.092
2,6-Dinitrotoluene	0.082	0.0015	0.092
2-Butanone	322.19	5.90	0.43
2-Hexanone	10.93	0.20	1.92 E-03
2-Methylnaphthalene	19.64	0.36	3.91 E-01
4,4 DDT	0.55	0.01	2.05 E-08

TABLE C.5-3
(Continued)

Off-Gas Limits for Radon/Organic Emissions Dryer Off-Gas Stack FERMCO Site-wide Air Model			
Organic/Radon Emission	Stack Limit (lbs/hr)	MAGLC Value (mg/m^3)	Worst Case Emission Rate (lbs/hr)
Acetone	970.78	17.8	0.34
Benzene	17.47	0.32	9.60 E-04
Carbon Disulfide	16.89	0.31	3.60 E-04
Carbon Tetrachloride	16.89	0.31	3.60 E-04
Chlorobenzene	25.11	0.46	5.40 E-04
Chloroform	26.75	0.49	0.098
Dichlorodifluoromethane	22.93	0.42	1.78
Dichloromethane	95.00	1.74	0.17
Diethyl Phthalate	2.73	0.05	0.16
Ethylbenzene	2369.62	43.40	2.88 E-02
Hexachloroethane	5.31	0.097	9.17 E-02
Isobutyl alcohol	82.94	1.52	4.06 E-02
Isophorone	15.29	0.28	0.41
Methylene Chloride	95.17	1.74	0.22
Naphthalene	28.40	0.52	1.08
Pentachlorophenol	0.27	0.005	0.40
Phenol	10.36	0.19	0.087
Styrene	116.19	2.13	3.60 E-04
Tetrachloroethene	184.98	3.39	0.36
Toluene	102.81	1.88	0.022
Total Xylene	236.96	4.34	0.039
Tributyl Phosphate	1.20	0.022	7.20
Trans-1,2-Dichloroethene	431.88	7.91	2.69
Trichloroethene	146.76	2.69	0.26
Trichlorofluoromethane	3057.58	56.00	9.60 E-04
Vinyl Chloride	7.11	0.13	7.42 E-02

C.5.1.2.5 ARARs/TBCs

Tables in Attachment J.4.1 of this subcontract provide a description of all the ARARs/TBCs for this project, as well as an assessment of the requirement.

C.5.1.2.6 Substantive Permitting Requirements

Tables in Attachment J.4.2 of this subcontract provide a description of all the substantive permit requirements for this project. CERCLA Section 121(e)(1) states that no Federal, State, or local permit will be required for the portion of any removal or remedial action conducted entirely on-site, where such remedial action is selected and carried out according to Section 121. This does not, however, exempt that project from complying with the substantive requirements that would have been imposed by such permits.

C.5.1.2.7 As Low As Reasonably Achievable (ALARA) Requirements

As Low As Reasonably Achievable (ALARA) is an approach to manage and control radiological exposures (individual and collective) to the work force and to the general public at levels as low as is reasonable, taking into account social, technical, economic, practical and public policy consideration. ALARA is not a dose limit but a process that has the objective of attaining doses as far below the applicable controlling limits as is reasonably achievable. Engineering controls specified in the subcontractor's ALARA plans shall be incorporated into the design of the subcontractor's remediation system. See Attachment J.3.4, Section J.3.4.2.1, ALARA Plans and Exposure Limits, for requirements related to the ALARA concept.

C.5.1.2.8 Environmental Investigations and Engineering Studies

a. Environmental sampling and analysis shall be performed in accordance with the Sitewide CERCLA Quality Assurance Project Plan (SCQ)and the EPA's Guide for Conducting Treatability Studies under CERCLA (EPA 1992).

b. No sampling activity, i,e., borings, shall take place within three feet of the waste pit liners. Care must be taken to ensure the integrity of the liners until the excavation has proceeded to those areas and depths. Figure C.5-2 shows the approximate elevations of the pit liners.

c. Investigations or studies shall be planned and executed by the subcontractor in a manner that will ensure continued compliance with a scheduled July 1, 1998 start date for operations.

C.5.1.2.9 Surveying

a. Surveyed coordinates shall be referenced to the NAD 83 State Planar Coordinate System.

b. All survey work shall be to a third order accuracy standard as established by the Standards and Specifications for Geodetic Control Networks.

C.5.1.2.10 Geotechnical Investigations

a. Geotechnical sampling and analysis shall be done in accordance with the American Society For Testing And Materials (ASTM), Section 4 (Soil and Rock; Dimension Stone; Geosynthetics) dated March 1996 or the latest revision. Any deviation from the above ASTM procedures shall be approved by FERMCO prior to implementation.

b. Any geotechnical calculations (i.e., bearing capacity, slope stability) performed by the subcontractor to support design of foundations shall be approved by a State of Ohio Registered Professional Geotechnical Engineer in accordance with standard engineering practice.

c. Geotechnical investigations conducted in the waste pits shall be performed in accordance with the Sitewide CERCLA Quality Assurance Project Plan (SCQ)and the EPA's Guide for Conducting Treatability Studies under CERCLA (EPA 1992) to directly support environmental clean-up.

d. No borings shall be placed within three feet of the waste pit liners. Care must be taken to ensure the integrity of the liners until the excavation has proceeded to those areas and depths.

C.5.1.3 Process Design Submittals

C.5.1.3.1 Plant Facilities Engineering Package (EPA Submittal with Design Package)

a. Description of the Subcontractor's Operation and Processes
The description of the operation and processes shall include, but not be limited to, the sequence and operating parameters associated with waste preparation; material handling; wastewater and stormwater treatment, control, and distribution; process surge capacity and configuration; blending; drying; air emissions controls (fugitive and point source); sampling and analysis; load-out; and process control philosophy. It should also discuss reasons for selecting this processing sequence and the utility requirements.

b. Design Criteria and Assumptions
The design criteria shall be specific criteria which affect the subcontractor's design, including, but not limited to, subcontract performance requirements, all pertinent DOE Orders specified or referred to in this subcontract, and standard industrial codes and requirements. The design criteria shall also provide the subcontractor's strategy, based on the proposed design, for complying with the ARARs and the substantive permit requirements (a "permitting crosswalk") and a description of where in the design package a particular requirement is addressed. Tables in Attachment J.4.1 and J.4.2, respectively, provide space to record this information. The design criteria should also summarize the results of studies, reports, and/or evaluations the subcontractor conducted in support of the design. Assumptions should be clearly identified for any design criteria that cannot be verified until the subcontractor is in the field.

c. Process Flow Diagram(s) with a Mass and Energy Balance

d. Site Plan(s)

e. General Arrangement Plan(s)

f. Equipment Data Sheets or Specifications
Equipment specifications shall describe the process-determined features required for individual items of equipment (dryer, shredder, pumps, tanks, blowers, condensers, etc.). The descriptions of these features must include performance requirements and may include mechanical requirements to clarify desirable or necessary features. These specifications should serve as a guide for the preparation of subsequent detailed designs, drawings, requisitions, or specifications.

C.5.1.3.2 Environmental Investigation/Engineering Study Work Plan(s)

Work plan(s) for conducting environmental investigations and engineering studies shall be developed consistent with the requirements of EPA's Guide for Conducting Treatability Studies under CERCLA (EPA, 1992).

C.5.1.3.3 Point Source Air Emission Data

If the subcontractor's point source air emissions concentrations assumptions do not match the METSIM concentrations and assumptions (Parson's Report, Revised off-gas Composition Data and Radon Calculation, October 17, 1995), then the subcontractor must provide the new air emissions data to FERMCO so that FERMCO can generate new stack limits using the integrated site-wide air model. The data required from the subcontractor includes:

a. An estimate of the concentrations of pollutants listed in Table C.5-3 that will be emitted from each point source (e.g., the dryer off-gas).

b. Description of assumptions used to develop the estimates in C.5.1.3.3.a. The assumptions shall include, as a minimum, the parameters listed in Table C.5-2.

C.5.2 SITE PREPARATION

This section contains the technical requirements for conducting site preparation activities as defined in Section C.3.2.1.4. FERMCO has conducted much of the site preparation required in the work area during the spring of 1996. Refer to the Operable Unit 1 Pre-Final Design Package 1, Volume 1 of 2, Site Improvements Package for the details of this work.

C.5.2.1 Section Includes:

a. Laying Out of Work

b. Identification and Relocation of Utilities

c. Site Clearing

d. Earthwork (Except Pit Excavation)

e. Roads and Fencing

f. Paving and Surfacing

g. Utilities

h. Construction/Installation of Portable Structures

i. Laundry Facility

j. Respirator Wash Facility

k. Subcontractor's Control Point Trailers

l. Portable Analytical Laboratory Facilities

m. Erosion Control

n. Dust Suppression

o. Monitoring Wells

C.5.2.2 Technical Requirements for Site Preparation

C.5.2.2.1 Laying Out of Work

a. The construction and the rights of way of work shall be staked out and all dimensions relating to the interconnection with existing features shall be verified.

b. Any inconsistencies in the dimensions of the existing site features or utility locations shall be communicated to the FERMCO Technical Representative prior to commencing work.

C.5.2.2.2 Identification and Relocation of Utilities

a. The subcontractor shall verify the exact location of all buried utilities, cable, pipes, and wire that may be located in the area of work. The subcontractor shall repair any underground utilities damaged by the subcontractor during execution of the work at no cost to FERMCO.

b. Active utilities which do not interfere with the work shall be supported and protected from damage. After obtaining the FERMCO Technical Representative's approval, relocate or remove active utilities which interfere with work.

C.5.2.2.3 Site Clearing

a. Clearing shall include the removal and disposal of large debris that obtrude, encroach upon, or otherwise obstruct the work. Loose rocks, boulders, or rock piles present on the surface of the areas designated to be cleared shall be distributed and incorporated into the filling operation.

b. All areas to be cleared shall be clearly marked and obtain the FERMCO Technical Representative's approval prior to beginning clearing.

c. The remediation system shall be arranged to reduce the amount of clearing required.

d. Work shall be performed in accordance with ODOT standards.

e. Topsoil shall be removed and salvaged for re-use where possible.

f. Material that cannot be re-used must be disposed of in accordance with the procedures for construction waste cited in Section C.5.1.2.2.

C.5.2.2.4 Earthwork (Except Pit Excavation)

a. Earthwork includes, but is not limited to, all grading, excavation, compaction, trenching, and filling, and shall be specified to conform to ODOT standards.

b. Trenching and open pit excavations shall also conform to Occupational Safety and Health Administration (OSHA) standards, 29 CFR Part 1926.

c. Where feasible, permanent slopes shall be a minimum of 0.5 percent for impervious surfaces, 2 percent for vegetated surfaces, and no greater than 3 horizontal to 1 vertical (3H:1V).

d. Cut and fill shall be planned to avoid, if possible, adding any new material to the work area.

e. The subcontractor shall minimize the creation of additional wastes and excessive earthwork.

f. Backfill material shall be obtained from an on-site and/or off-site borrow area approved by FERMCO.

g. Any excess or temporarily unused materials shall be stockpiled in a clean area to be designated by the FERMCO Technical Representative.

C.5.2.2.5 Roads and Fencing

a. Roads shall be designed in accordance with AASHTO requirements for the subcontractor vehicle loads.

b. Emergency vehicle access roads shall be provided so the perimeter of a portable structure is not more than 150 feet from the nearest roadway.

c. All vehicle access roads shall be a minimum of 20 feet clear in width. Roads of less than 30 feet in width shall be posted as "Fire Lane No Parking."

d. Structures within 10 feet of a roadway shall be protected from impact.

e. Security fences, and similar man-made obstructions shall not restrict emergency access.

f. Radiological Control fencing is required around the entire perimeter for the subcontractor's work area as specified in Attachment J.3.4, Section J.3.4.4.6.

g. Radiological Control fencing shall be constructed similar to snow fencing (Items 12 and 13 below).

h. Fencing shall be installed around the entire perimeter of the process system including waste stockpiles.

i. Process system fencing shall be 8 feet high galvanized steel chain link fence with 3 foot wide by full height pedestrian gates. Vehicle gates shall be at least 12 feet wide by full height.

j. All fencing shall be installed according to manufacturers instructions.

k. All fencing shall be designed and manufactured in accordance with ASTM codes and standards.

l. Snow fence shall be orange for construction fencing or yellow for radiological boundaries and 4 feet high, fencing material shall be as follows:

Material: High Density Polyethylene
Ultraviolet: Fully Stabilized

m. Snow fence posts shall be No. 5 rebar with orange plastic spaced no more than 8 feet apart and electric tie-wraps to secure fencing.

C.5.2.2.6 Paving and Surfacing

a. All paving and surfacing methods, materials, design, and details shall conform to ODOT standards.

b. AASHTO's *A Policy on Geometric Design of Highways and Streets* 1990 (GDHS-90) will be used as a reference in site layout.

c. Unless conditions dictate otherwise, the minimum slope shall be 0.5 percent.

C.5.2.2.7 Utilities

a. Tie-in points for natural gas, process water (designated as treated water), fire water, and electric power are identified on Figure C.1-3.

b. All utilities shall be run aboveground unless specific approval to run below ground is given to the subcontractor by the FERMCO Technical Representative.

c. Utility Requirements are specified in Section C.5.3.2.6.

d. Backflow preventers shall be installed on process water lines at the tie-in point to the FERMCO lines and wherever a potable water branch line is connected to the process water line.

C.5.2.2.8 Construction/Installation of Portable Structures

a. Each portable structure shall have support and anchoring systems that will resist overturning and lateral movement of the unit. Support and anchoring equipment shall be in accordance with manufacturer's specifications or an anchoring system designed and stamped by a registered professional engineer.

b. Portable structures shall be identified by a unique, alphanumeric marking on each side of the unit. FERMCO will identify the number. The identification marking shall consist of a painted, 14-inch by 14-inch orange square, bordered by a 1-inch black border, and the identification marking in black characters, 1/2-inch or wider and at least 4 inches high within the orange square. All other conflicting numerical identification shall be removed from the structure.

c. Each portable structure shall have the area under the floor enclosed to prevent the accumulation of windblown debris and to prevent the space from being used for storage. Semi-trailers used exclusively for storage also require orange snow fence or similar skirting to prevent accumulation of debris. The skirting shall be of

noncombustible material and without openings. The only exceptions are service access doors and screened louvers installed for ventilation.

d. Stairs, ramps, and platforms shall be constructed of weather-resistant lumber or other weather-resistant materials. All stairs shall comply with OSHA Subparts D & E and NFPA 101 (refer to Attachment C for general stair requirements).

e. Plumbing and sanitation facilities shall meet state and local code requirements.

f. All electrical conductors and equipment shall be in accordance with the latest edition of NFPA 70, "National Electric Code."

g. Heating and cooling equipment shall be UL listed or labeled, and installed in accordance with its listed design and appropriate standards. Only electric or steam units shall be installed.

h. All normally occupied portable structures shall have a minimum of two exits remote from each other unless the maximum occupancy is 10 persons or less and provided the travel distance to the outside shall not exceed 75 feet.

i. The minimum width of any corridor, or main aisle-way exit passageway, or primary aisle-way shall be 44 inches. The minimum width of any aisle serving to gain access to a corridor or exit passageway shall be 36 inches in the clear. No door opening in the means of egress shall be less than 32 inches in clear width.

j. Doors shall be arranged to be readily opened from the egress side whenever the structure is occupied.

k. Exits shall be marked by an approved sign readily visible from any direction of exit access. An exception is the main exterior doors that are obvious and clearly identified as exits.

l. All complexes shall be located so that fire fighting equipment is not blocked from access to adjacent structures.

m. Portable structures shall not be located within 50 feet of a fire hydrant. All exterior portions of the structure shall be within 300 feet of a hydrant in a hydrated area.

n. Portable structures shall not be located over control valves, manholes serving underground utility systems, gas mains, water mains, or utility corridors or beneath vital power lines/utilities or any power lines over 600 volts.

o. Unless approved by the FERMCO Technical Representative, the required separation distance shall be based on the most hazardous condition and may vary given the actual use and size of the structures. NFPA 80A shall be used to determine minimum separation distances between fire areas. NFPA 80A shall be used to determine the required separation distances between a portable structure and a permanent building.

p. Fire alarms, Emergency Message System, and evacuation alarms shall be installed as required by 29 CFR 110.155.

q. Portable structures must meet the requirements of the Ohio Basic Building Code or DOE STD 1088-95 "Fire Protection for Relocatable Structures".

C.5.2.2.9 Laundry Facility

Laundry facilities provided by the subcontractor shall be designed, constructed, and operated to meet the following criteria:

a. Technical requirements for portable structures, Section C.5.2.2.8.

b. Radiological control criteria specified in Attachment J.3.4.

c. Clothes dryer exhaust shall be HEPA filtered.

d. The wastewater discharge from the laundry facility shall be delivered by the subcontractor directly to the AWWT either by truck or pipeline. The total quantity of water generated shall be included in the maximum allowable discharge rate (Section C.5.1.2.3, Wastewater and Stormwater Acceptance Criteria).

C.5.2.2.10 Respirator Wash Facility

Respirator wash facilities provided by the subcontractor shall be designed, constructed and operated to meet the following criteria:

a. Technical requirements for portable structures, Section C.5.2.2.8.

b. The subcontractor's respirator wash facility shall be able to clean respirators to the criteria specified in with Attachment J.3.4.

c. Wastewater discharges shall be pumped into the tank common with the laundry facility. If the subcontractor does not have a laundry facility, then the wastewater shall be discharged to a tank supplied by the subcontractor with a minimum 1-week capacity.

C.5.2.2.11 Subcontractor's Control Point Trailer

a. The subcontractor's control point trailer shall be large enough to accommodate all subcontractor personnel and FERMCO personnel performing work in the project area (see Figure C.5-4 for an example of an acceptable Control Point Trailer).

b. The trailer shall have separate accommodations for men and women.

c. The control point trailer shall be constructed in accordance with the requirement for portable structures specified in Section C.5.2.2.8.

d. Sufficient electrical power to supply the facility plus three (3) personal contamination monitors (PCMs), and 50 outlets for Power Air Purifying Respirator (PAPR) type respirators (Total power requirement equal to approximately 6kVA).

e. Storage bins for Anti-C's (washables and disposables).

f. Storage bins for respirators and respirator cartridges.

g. Storage bins (barrels) for dirty Anti-C's.

h. Disposal barrels for disposable Anti-C's.

i. Benches.

j. Office space for one radiological technician.

k. One telephone.

C.5.2.2.12 Portable Analytical Laboratory Facilities

a. Portable analytical laboratory facilities shall be constructed in accordance with the requirements for portable structures, Section C.5.2.2.8.

b. Analytical equipment shall meet the requirements specified in Section C.6.2.17.

c. Background radiation levels that can be tolerated by the analytical equipment to maintain accuracy shall be provided to FERMCO so that FERMCO can locate a suitable location for the laboratory.

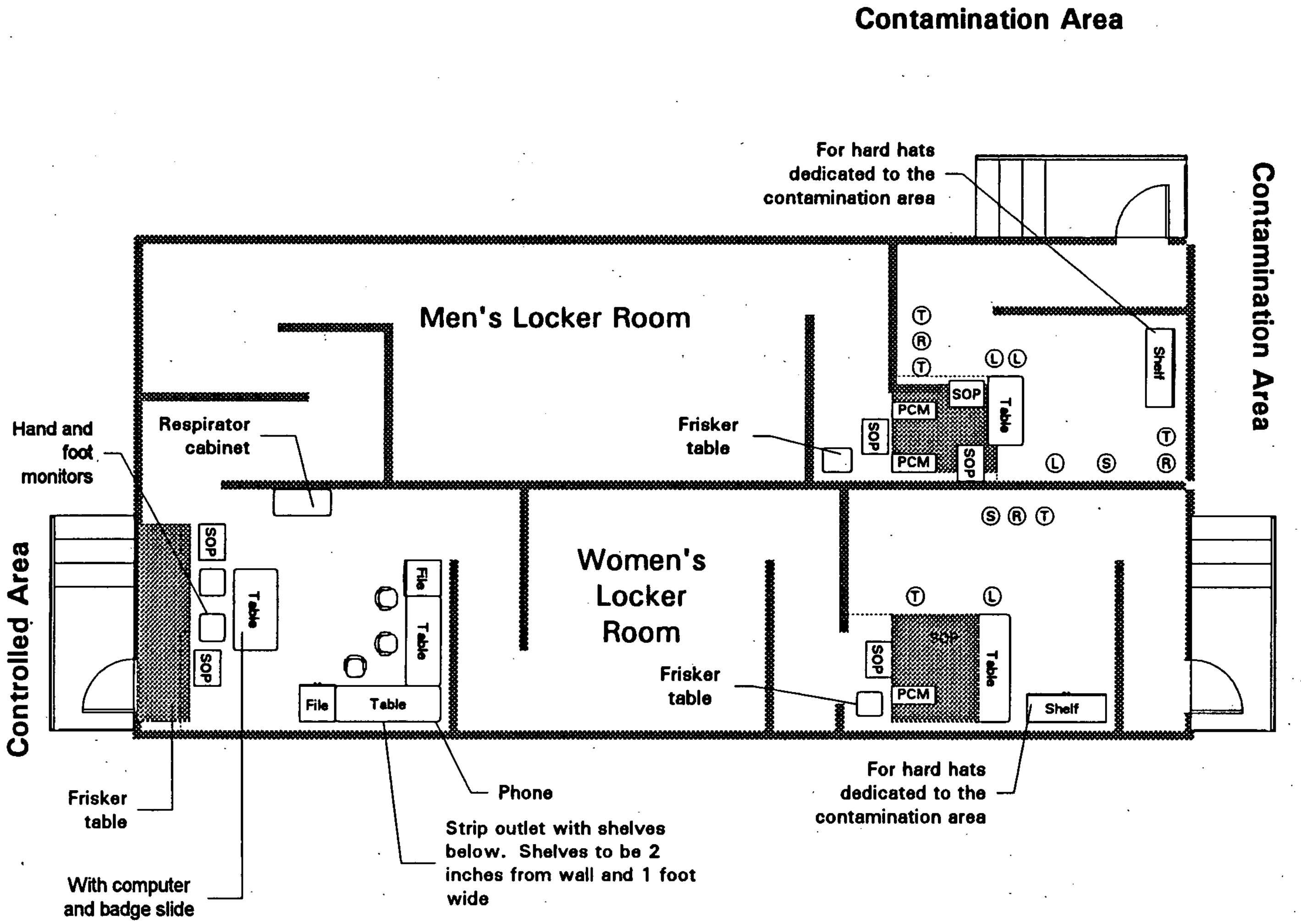
d. Laboratory samples shall be discarded into drums fitted with liquid-tight lids. Inventories of the contents of the drums shall be documented in accordance with the chain-of-custody requirements specified in Attachment J.3.5, Quality Assurance Requirements. The subcontractor is responsible for proper storage, management, control, inspection, and disposal of the drums and waste.

C.5.2.2.13 Erosion Control

a. Permanent or temporary measures shall be implemented by the subcontractor to prevent erosion (both wind and water) and control sediment during site preparation and construction.

b. Erosion and sediment control measures shall be maintained throughout the duration of the subcontractor's work. ODOT standards for control measures shall be specified.

c. Erosion control shall be consistent with the Rainwater and Land Development, Ohio's Standards for Stormwater Management and Stream Protection, 1995 and the FERMCO Stormwater Pollution Prevention Plan (SWPPP).



Legend

- (R) Green and white drum for collection of respirators
- (T) 55 gallon drum for collection of trash
- (L) 55 Gallon drum for collection of launderable anti-C's
- (S) 55 gallon drum for collection of shoe-covers
- [Table] For collection of items awaiting survey by a RCT (tape, samplers, radios, PAPR pumps, etc.)
- [SOP] Step-off pads
- [PCM] Personnel Contamination Monitors
- Shaded area is a buffer zone
- Dotted lines are yellow and magenta rope boundaries with the ends connected to stanchions or walls

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

FERMCO FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

CONTROL POINT TRAILERS

Date 6/24/96
Drawn D.E. Wilson

Figure C.5-4

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d. Erosion control features shall be in place prior to any disturbance of the soil in the work area.

C.5.2.2.14 Dust Suppression

a. All excavation, embankments, haul roads, plant sites, waste disposal areas, borrow areas, and all other areas within the work area shall be maintained so as to minimize the creation and dispersion of dust in accordance with the OAC 3745-17-07 (B) and OAC 3745-17-08 (B).

b. In general, water or other substances used for dust suppression shall not increase the concentration of contamination in the area where the water is being applied. Stormwater from the stormwater management pond (located in the northern half of the process area) may be used to suppress dust during site preparation and construction activities.

c. Trucks used for transporting excavated or borrow material shall be equipped with covers or some other means to control dust from the cargo. If dust levels are significant, the covers or other acceptable method shall be implemented to prevent the generation of dust.

d. Dust suppressant will be applied in accordance with the procedures for dust control described in the subcontractor's Environmental Control Plan.

C.5.2.2.15 Monitoring Wells

Monitoring wells located within the subcontractor's work area (Figure C.1-3) shall be protected from damage during operations. These wells include 2454, 2648, 2821, 3821, 2010, 4010, and 2953 as shown on Figure C.5-1. Monitoring wells within the site excavation/restoration area may be abandoned as the subcontractor's excavation and/or site restoration proceeds, or at the subcontractor's discretion to avoid any operational hindrances. The subcontractor may remove 1000 series wells as the excavation proceeds, the 1000 series wells within each pit are at a depth above their respective waste pit liners. FERMCO will abandon all 2000 and 3000 series wells within the excavation/site restoration area. The subcontractor shall provide FERMCO Technical Representative 60 days written notice as to when the 2000 and 3000 series wells need to be abandoned.

C.5.2.3 Submittals

C.5.2.3.1 Site Preparation Package (EPA Deliverable)

The site preparation package shall contain:

a. Description of the Work

b. Site Plan

c. Grading Plan (including any additional storm sewers)

d. Associated Profiles and Details

e. Specifications

f. Manufacturers Fabrication Drawings of Portable Structures

g. Utility Plans for Portable Structures

C.5.2.3.2 Pre-Operational Environmental Control Plan (EPA Deliverable)

The Pre-Operational Environmental Control Plan shall describe the methods and materials that the subcontractor will use during site preparation and construction to control erosion, dust and stormwater so as to minimize the impact of these activities on the environment.

a. Erosion Control
Description of the methods and materials to be used to prevent erosion of soil either by wind or surface water in the work area to reduce sediment loading in the stormwater. Included in the description should be a drawing showing the location of the erosion control features and amount of run-on and run-off in the work area.

b. Dust Control
Methods and materials to be used to suppress and minimize the creation and dispersion of dust.

c. Stormwater Control
Description of the methods, materials, and existing site features to be used to capture stormwater.

C.5.2.3.3 Pre-Operational Health and Safety Plan

Requirements for the Pre-Operational Health and Safety Plan are stated in Attachment J.3.3.

C.5.3 FACILITY CONSTRUCTION

This section contains the technical requirements for construction of the subcontractor's remediation facility as defined in Section C.3.2.1.5. Where the subcontractor is using existing or pre-engineered facilities that do not conform to the codes or standards required in this section, the subcontractor must describe to FERMCO the code and standards that were applied along with the justification for differing from the requirements. FERMCO reserves the right to disallow any individual item or sub-system that, due to it's design, presents a risk to the health and safety of the workers.

C.5.3.1 Section Includes

a. Mechanical

b. Conveyors and Material Transferring Equipment

c. Electrical

d. Concrete Foundations, Floors, Pads, and Ramps

e. Buildings

f. Utilities

g. HVAC

h. Fuel Storage/Dispensing Facilities

i. Fire Detection/Suppression Systems

j. Steel Construction

k. Thermal and Moisture Protection

l. Control Rooms

m. Erosion Control

n. Dust Suppression

o. Construction Acceptance Testing

C.5.3.2 Technical Requirements for Construction

C.5.3.2.1 Mechanical

All mechanical components and systems shall be designed, tested, and installed in accordance with the following codes and standards as applicable.

a. Bearings
- American Bearing Manufacturers Association, Inc. (ABMA)

b. Gears
- American Gear Manufacturers Association (AGMA)

c. Motors
- Institute of Electrical and Electronics Engineers (IEEE)

d. Air Handling Equipment
- Air Movement and Control Association (AMCA)
- American National Standards Institute (ANSI)
- American Society of Mechanical Engineers (ASME)
- American Society for Testing and Materials (ASTM)
- Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
- Energy Research and Development Administration (ERDA)

e. Pipe, Fittings, Valves, and Accessories
- American Society of Mechanical Engineers (ASME)
- American Society for Testing and Materials (ASTM)
- American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME)
- Expansion Joint Manufacturer's Association (EJMA)
- American Society for Nondestructive Testing (ASNT)
- Manufacturers Standardization Society (MSS)

f. Tanks and Pressure Vessels
- American Society of Mechanical Engineers (ASME)
- American Petroleum Institute (API)

g. Pumps
- American Society of Mechanical Engineers (ASME)
- Hydraulic Institute Standards - 1995

h. Heat Exchangers
- Tubular Exchanger Manufacturers Association (TEMA)

i. Conveyors and Material Transferring Equipment

All conveyor and material transfer components and systems shall be designed, tested, and installed in accordance with the Conveyor Equipment Manufacturers Association (CEMA) codes and standards as applicable.

C.5.3.2.3 Electrical

a. All electrical components and systems shall be designed, tested, and installed in accordance with the applicable sections of the following codes and standards.

- American National Standards Institute (ANSI)
- Underwriters Laboratories, Inc. (UL)
- National Electrical Manufacturers Association (NEMA)
- InterNational Electrical Testing Association (NETA)
- International Society for Measurement and Control (ISA)

b. Five 120v Electrical Receptacles shall be installed in the following areas of the anticipated treatment facility to provide power for radiological monitors operated by FERMCO: (1) central to the stockpiles inside of the facility boundaries; (2) between the stockpiles and the dryer; (3) at the exhaust of the dryer; (4) at the shredder; and (5) at the railcar loading area.

C.5.3.2.4 Concrete Foundations, Floors, Pads, and Ramps

a. All concrete work shall be designed and constructed according to all applicable American Concrete Institute (ACI) codes, ACI 301 for Structural Concrete for Buildings, ACI 318 for Building Code Requirements for Reinforced Concrete, ACI 347 for Recommended Practice for Concrete Formwork, American Society for Testing and Materials (ASTM) and Concrete Reinforcing Steel Institute (CRSI) codes.

b. Concrete testing and cement selection shall be done in accordance with ACI and ASTM codes.

c. Sampling and testing of the concrete shall be performed by an independent laboratory and paid for by the subcontractor.

C.5.3.2.5 Buildings

a. Permanent or temporary structures shall be designed, constructed and/or assembled according to all applicable codes and standards including the Uniform Building Code (UBC), Ohio Basic Building Code (OBBC), American Institute of Steel Construction (AISC), American Welding Society (AWS), ACI, ASTM, and ANSI codes. ACI 301 - Structural Concrete for Buildings, ACI 302 - Guide for Concrete Floor and Slab Construction, ACI 318 - Building Code Requirements for Reinforced Concrete. Material testing and construction shall be done in accordance with the above codes.

b. Pedestrian Access

1) All walkways should be constructed of weather-resistant lumber or other weather-resistant material with permanent non-skid surface.

2) No means of egress from a portable structure shall discharge into a roadway or traffic flow area.

3) Stairs with platforms and handrails shall be provided for each exterior door.

4) Stairs, platforms, ramps, and handrails shall be arranged to resist movement.

C.5.3.2.6 Utilities

a. Tie in points for utility services are identified in Figure C.1-3.

b. Utilities shall be installed above ground where possible and heat traced where necessary. The subcontractor must obtain approval from the FERMCO Technical Representative to run any utility line underground.

c. Utilities shall be protected and provided with concrete or steel supports.

d. All utilities shall be designed to applicable codes and engineering standards, such as, American Society for the Testing of Materials (ASTM), ANSI, American Society of Mechanical Engineers (ASME), American Water Works Association (AWWA), American Welding Society (AWS), National Fire Protection Association (NFPA), National Fuel Code (NFC), and the National Electrical Manufacturers Association (NEMA).

C.5.3.2.7 HVAC

HVAC systems shall be designed, tested and installed in accordance with applicable requirements of United Laboratories (UL) 778 - Motor Operated Water Pumps, National Fire Protection Association (NFPA) 70 - National Electrical Code, ASTM, ASME, and ANSI.

C.5.3.2.8 Fuel Storage/Dispensing Facilities

Fuel storage tanks and lines shall be designed, tested and installed according to the ASME, NFC, and ASTM requirements.

C.5.3.2.9 Fire Detection/Suppression Systems

Fire detection/suppression systems shall be designed, tested and installed according to the Ohio Basic Building Code (latest edition), NFC, NFPA, DOE Order 420.1, and DOE Standard 1088-95, Fire Protection for Relocatable Structures.

C.5.3.2.10 Steel Construction

All steel construction shall be designed, tested, and installed in accordance with the applicable sections of the following codes and standards

- American Iron and Steel Institute (AISI).
- ASTM
- AISC
- ASCE
- AWS

C.5.3.2.11 Thermal and Moisture Protection

All thermal and moisture protection components and systems shall be designed, tested, and installed in accordance with all applicable ASTM codes and standards.

C.5.3.2.12 Control Rooms

a. Equipment control rooms shall be HEPA filtered such that anti-contamination suits and air-purifying respirators are not necessary.

b. The control room shall be offset a safe distance from any potential explosions.

c. All stationary equipment shall have emergency off switches in the control room.

d. The control room shall be designed according to all applicable codes and standards, ASTM, NEMA, ANSI, ASME, NFPA, NFC.

C.5.3.2.13 Erosion Control

a. Permanent or temporary measures shall be implemented by the subcontractor to prevent erosion (both wind and water) and control sediment during site preparation and construction.

b. Erosion and sediment control measures shall be maintained throughout the duration of the subcontractor's work. ODOT standards for control measures shall be specified.

c. Erosion control shall be consistent with the Rainwater and Land Development, Ohio's Standards for Stormwater Management and Stream Protection, 1995 and the FERMCO Stormwater Pollution Prevention Plan (SWPPP).

d. Erosion control features shall be in place prior to any disturbance of the soil in the work area.

C.5.3.2.14 Dust Suppression

Refer to Section C.5.2.2.14.

C.5.3.2.15 Construction Acceptance Testing

Construction Acceptance Testing (CAT) shall be performed during and after construction.

a. CAT during construction shall be conducted to verify that elements of an item/activity/system are in compliance with the standards, codes, and specifications contained within the CFC design package. These tests are elementary, standard and essentially generic to all types of projects and may include concrete and soils strength tests, instrument calibration tests, and piping pressure tests.

b. Post-construction CAT shall verify that components and systems are installed/constructed correctly and operate as intended. The procedures for conducting post-construction CAT shall be developed and performed by the subcontractor. These tests may include turning on pumps, fans, motors, drivers, or the dryer furnace and checking the accuracy and operation of instructions, controls, and interlocks.

C.5.3.3 Construction Submittals

C.5.3.3.1 Certified for Construction Package

The subcontractor's Certified for Construction (CFC) package shall contain, but not be limited to, the items listed below. Some of the items listed were previously identified for inclusion in the Plant Facilities Engineering Package in Section C.5.1.3.1 and should be resubmitted with the CFC package.

The CFC package shall be submitted to FERMCO for review and concurrence at the 30 percent completion level and the 90 percent completion level. The Plant Facilities Engineering Package (Section C.5.1.3.1) may serve as the 30 percent submittal. All drawings shall be prepared under the direction of, approved by, and stamped by a professional engineer licensed in the State of Ohio. FERMCO will review and comment on the CFC package for operability, maintainability, constructability, and safety.

a. Process Design
Process Description (Item 1, Plant Facilities Engineering Package)
Design Criteria and Assumptions (Item 2, Plant Facilities Engineering Package)
Process Flow Diagram (Item 3, Plant Facilities Engineering Package)
Process and Instrumentation Diagrams (P&IDs)
Logic Diagram
Drawing List

b. Civil Design
Site Plan (Item 4, Plant Facilities Engineering Package)
Site Grading Plans and Details
Foundation/Containment Plans and Details

c. Structural Design
Structural Support Plans and Details

d. Mechanical Design
Equipment List
General Arrangement Plan (Item 5, Plant Facilities Engineering Package)
Equipment Arrangement Plan and Details
Equipment Data Sheets or Specifications for "off-the-shelf " Equipment (Item 6, Plant Facilities Engineering Package)
Equipment Design, Specifications, and Details for Custom Equipment

e. Piping Design
Piping Line List
Aboveground piping plans, sections, and details (including piping supports, electrical heat tracing, and pipe insulation)
Belowground piping plans, sections, and details

f. Electrical Design
Electrical One-line Diagram
Electrical layouts, schematics, plans, single lines, and details for
- Power distribution line(s) from FERMCO supplied power source and within the process facility
- Step-down transformer with switching gear
- New poles where necessary

Lighting Plans and details

g. Instrumentation and Controls Design
Instrument List
Instrumentation loop diagrams, layout, and details
Programmable logic controller (PLC)/interface layout and details
PLC ladder logic
Control wiring cable tray routing
Instrumentation data sheets and installation details

h. Construction Specifications
Vendor Information (Shop Drawings, Installation Instructions, etc.)
Construction Specifications (i.e., civil, structural, piping, mechanical, electrical, instrumentation, etc.).

C.5.3.3.2 Construction Acceptance Tests Plan

The subcontractor shall prepare a Construction Acceptance Tests Plan that identifies and describes in detail all construction testing required by the codes and standards that are applicable to the subcontractor's facility.

C.5.3.3.3 Pre-Operational Schedule (EPA Submittal with Design Package)

See Section C.4.6.2.

C.5.3.3.4 Construction Safe Work Plan

The subcontractor's Safe Work Plan shall be specific to the activities to be performed under this subcontract. The Safe Work Plan shall be prepared to the level of detail as follows:

a. The Safe Work Plan Shall describe the work in sufficient detail to provide the following:

1) Assurance to FERMCO that the subcontractor has assessed the risks associated with the work, and addressed preventive measures for safety and health hazards.

2) Assurance to FERMCO that the work in progress complies accurately with the safety and health and performance requirements specified in this subcontract document.

3) A basis for FERMCO's internal planning activities.

4) Assurance to FERMCO that the subcontractor has safely planned the work in sufficient detail to meet schedule requirements.

b. The Safe Work Plan shall be prepared and organized as an outline of major items of work arranged in sequence according to the construction schedule. The plan shall describe the methodologies of each activity of work including the safety and health concerns, preventive measures, equipment, personnel, and lower-tier subcontractors to be used during each sequence. The minimum level of detail shall include as applicable the following

1) Site mobilization details including delivery and set-up of equipment, office trailers, fuel storage area waste disposal, anticipated training schedule and demobilization activities.

2) Personnel safety planning, craft designations, crew size, and number of crews performing the work; types, sizes, and number of pieces of equipment; testing requirements and procedures.

3) A summary of the subcontractor's plan for maintenance, services and repair of onsite equipment.

4) Detail of dust control requirements including equipment, frequency of application, and control of run off.

5) Description of methods and application of erosion control measures for protection of the environment and work at all times including winter operations.

c. The Safe Work Plan shall be developed in such a format that individual pages or sections addressing discrete work activities and corresponding health and safety requirements may be lifted from the plan and utilized for briefing the work force prior to commencement of each new activity.

C.5.3.3.5 <u>Pre-Operational Environmental Control Plan (EPA Deliverable)</u>

For the Construction phase of work, the subcontractor shall implement Pre-Operational Environmental Control Plan prepared prior to Site Preparation (Section C.5.2.3.2).

C.5.3.3.6. <u>Pre-Operational Health and Safety Plan</u>

See Attachment J.3.3.

C.5.4 PRE-OPERATIONAL PROGRAMMATIC ACTIVITIES

This section contains the technical requirements for the pre-operational programmatic activities to be performed by the subcontractor in Section C.3.2.1.6.

C.5.4.1 Section Includes

a. Standing Orders

b. Procedures

b. Operator Training

c. Systems Operability Testing

d. Pre-Operational Assessment (PA) Process

C.5.4.2 Technical Requirements for Pre-Operational Programmatic Activities

The subcontractor shall develop standing orders, assemble procedures, develop a trained workforce, conduct systems operability testing, and prepare for and participate in a standard start-up review prior to start-up of the subcontractor's operation.

C.5.4.2.1 Standing Orders

Standing Orders are directives for implementing sound management and work practices that are to be used by supervisors, operators and maintenance personnel in conducting their work. Standing Orders are not technical operating procedures. The subcontractor shall develop Standing Orders and present them in a Standing Orders Manual.

a. The Standing Orders Manual shall incorporate the requirements stipulated in DOE Order 5480.19 "Conduct of Operations Requirements (CONOPS) for DOE Facilities".

b. The Standing Orders Manual shall establish the subcontractor's policy and administrative procedures for implementing CONOPS.

c. The Standing Orders Manual shall be a controlled document and kept current in its relevancy to ongoing and future operations.

d. The chapters of the FERMCO CONOPS Program that apply to each of the subcontractor's major process operations, as interpreted by FERMCO using a "graded approach," are presented in Table C.5-4, CONOPS Applicability Matrix. The Standing Orders Manual shall be prepared with reference to the Applicability Matrix. At a minimum, there should be one chapter in the Standing Orders Manual corresponding with each chapter of the Matrix where applicability is shown for one or more of the project areas. The subcontractor may develop another interpretation of the Applicability Matrix based on their proposed operation, however, it must be reviewed and approved by FERMCO.

A sample Standing Orders Manual will be provided with the subcontractor's information.

TABLE C.5-4
CONOPS APPLICABILITY MATRIX

Chapter	Chapter Title - Summary	Excavate	Segregate	Process	Loadout
1	Operation Organization and Administration - Discusses policies, resources, monitoring, and accountability needed in operations.	Y	Y	Y	Y
2	Shift Routines & Operating Practices - Describes some important aspects of routine shift activities and watch standing practices.	Y	Y	Y	Y
3	Control Area Activities[a] - Addresses important elements of control area activities that are necessary to support safe and efficient facility operation.	N	Y	Y	N
4	Communications - Describes important aspects of plant program for audible communications.	Y	Y	Y	Y
5	Control of On-Shift Training[b] - Guidelines relate to control of training activities by operations personnel.	N	N	N	N
6	Investigation of Abnormal Events[c] - Covers important aspects of abnormal events investigation program.	N	N	N	N
7	Notifications[d] - Provides guidelines to ensure uniformity, efficiency, and thoroughness of notifications to support fulfillment of DOE requirements consistent with DOE 5000.3A.	N	N	N	N
8	Control of Equipment and System Status - Provides an overall perspectives on control of equipment and system status.	N	Y	Y	Y
9	Lockouts and Tagouts - Describes important elements of a Lockout/Tagout Program and is intended to meet requirements of 29 CFR 1910.	Y	Y	Y	Y
10	Independent Verification[e] - Describes important aspects of an independent verification program.	N	N	N	N
11	Logkeeping - Describes features needed in the operation logs to ensure they are properly maintained.	N	N	N	N

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TABLE C.5-4
(Continued)

Chapter	Chapter Title - Summary	Excavate	Segregate	Process	Loadout
12	Operations Turnover - Compliments guidelines of Chapter 2, Shift Routines and Operating Procedures, and Chapter 3, Control Area Activities, and describes important aspects of a good shift turnover.	N	Y	Y	Y
13	Operations Aspects of Facility Chemistry and Unique Processes - Describes important aspects of operations involvement in chemistry and unique processes.	N	N	N	N
14	Required Reading - Describes an effective required-reading program.	Y	Y	Y	Y
15	Timely Orders to Operators - Describes key features of an effective operator orders program.	N	Y	Y	N
16	Operations Procedures[f] - Describes important aspects of operations procedure development and use.	N	Y	Y	Y
17	Operator Aid Postings - Describes important aspects of an operator aid program.	N	N	N	N
18	Equipment and Piping Labeling - Describes important aspects of a labeling program.	N	Y	Y	Y

Y = Chapter applicable to subdivision category.
N = Chapter not applicable to subdivision category.
a = Subcontractor shall designate a fixed area around soils separation and process control areas. Within those designated areas the requirements of Chapter 3 shall apply.
b = Subcontractor shall develop an initial training plan, lesson plans, and periodic re-training plan for all job classifications. The subcontractor shall develop an on-the -job training program for employee job classification changes or new employees.
c = Subcontractor not responsible for investigations but is expected to cooperate fully with investigations.
d = Subcontractor not responsible for notifications but is expected to comply fully with FEMP site procedure reporting requirements.
e = Not required of subcontractor except as specified in Chapter 9, Lockout and Tagout.
f = Excluding Excavation, the subcontractor shall prepare procedures according to DOE-STD-1029-92, 12/92, "DOE Standard: Writer's Guide for Technical Procedures." Existing operations procedures, if in conformance with DOE-STD-1029, may be acceptable.

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C.5.4.2.2 Procedures

Specific procedures, both administrative and technical, shall be developed as necessary for conducting the operation.

a. The subcontractor shall incorporate the applicable administrative requirements of CONOPS program (Table C.5-5) into the Standing Orders Manual using any combination of the following:

1) The subcontractor may incorporate administrative requirements into the Standing Orders without specific preparation of a procedure.

2) The subcontractor may develop administrative procedures to implement the various chapters of CONOPS and reference these procedures in the Standing Orders.

3) The subcontractor may use the FERMCO administrative procedures and reference these procedures in the Standing Orders. The FERMCO administrative procedures have been developed by FERMCO to implement the requirements of the 18 chapters of CONOPS.

b. Two exceptions exist to the flexibility in procedure usage described above.

1) The subcontractor must train to and use FERMCO's Site Operations Procedure OP-0004, "Lockout/Tagout Procedure" without exception (Chapter 9 of CONOPS.)

2) The subcontractor's program related to CONOPS Chapters 6 and 7, "Investigations" and "Notifications," has special requirements. The subcontractor is required to notify FERMCO'S Assistant Emergency Duty Officer (AEDO) of any occurrences requiring notification per DOE 5000.3B, which includes occurrences involving an abnormal event such as spills or other accidental releases to the environment; fires; explosions; and personnel injuries or contamination. The subcontractor shall also participate and cooperate in any investigations of occurrences which may be required. Refer to Attachment J.3.3 and Attachment J.3.4, Section J.3.4.6.2.

c. All operations shall be conducted in accordance with approved operating procedures. Guidance for developing these operating procedures can be obtained from the FERMCO Conduct of Operations (CONOPS) Program, RM-0029, Revision 0), November 30, 1995, Chapter 16, and the DOE-STD-1029-92, *"DOE Standard Writers Guide for Technical Procedures."* RM-0029 and the various FERMCO CONOPS procedures provide directions as to when an operating procedure is required.

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TABLE C.5-5
FERMCO STANDARD OPERATING PROCEDURES

CONOPS Chapter No.	FERMCO Procedure No.	FERMCO Standard Operating Procedure Title
1	OP-1001	Operation Organization and Administration
2	OP-1002	Shift Routines and Operating Practices
3	OP-1003	Control Area Activities
4	EM-0028	Audible Communications
5	OP-1005	Control of On-Shift Training
6	EM-0010	Event Notification and Occurrence Reporting
7	EM-0010	Event Notification and Occurrence Reporting
8	OP-1008	Control of Equipment and System Status
9	OP-0004	FERMCO Lockout/Tagout
10	OP-1010	Independent Verification
11	OP-1011	Logkeeping
12	OP-1012	Operations Turnover
13	OP-1013	Operations Aspects of Facility Chemistry and Unique Processes
14	OP-1016	Required Reading
15	OP-1015	Timely Orders to Operators
16	OP-1016	Operations Procedures Availability and Use
17	OP-1017	Operator Aid Postings
18	ED-12-4016	Equipment and Piping Labeling

C.5.4.2.3 Operator Training

Personnel shall be trained to implement the requirements of the Standing Orders Manual and the operating procedures. The subcontractor operator training program shall contain, as a minimum, the following requirements:

a. Operator training shall be referenceable to existing and relevant published certification, competent person, or qualification requirements and standards (OSHA, ASTM, ASME, DOE, NIOSH, FERMCO, etc.). Where such requirements and standards do not exist, the subcontractor shall establish project operators' training requirements and standards.

b. Training shall be functional, auditable, and meet the requirements and standards specified by the subcontractor in the Operator Training program.

c. Minimum qualification requirements and standards shall be established for all training personnel, including, but not limited to, education and experience of each instructor in the subject matter area where the instructor is proposed to be used.

Section C.5.4.3.2 of this subcontract contains more detailed information about training requirements and standards as specified under the Operator Training Program.

C.5.4.2.4 Systems Operability Testing

Systems Operability Testing (SOT) shall be conducted in accordance with the following requirements:

a. Construction Acceptance Testing must be completed prior to initiation of SOT.

b. DOE Order 430.1 Life-Cycle Asset Management

c. DOE Order 425.1 Startup and Restart of Nuclear Facilities

d. DOE Order 5700.6D Quality Assurance

Attachments J.4.31 and J.4.32 contain the FERMCO engineering procedure and guidance manual for system startup. These documents are provided as an example of the requirements to be addressed in System Operability Testing for successful compliance with the DOE orders.

C.5.4.2.5 Pre-Operational Assessment Process

The primary management tool used by FERMCO to determine the subcontractor's readiness is the Pre-operational Assessment (PA) process outlined in FERMCO RM-0025. The type of review required for this project, based on Hazard Category of less than 3, is a "Standard Startup Review" (SSR). An SSR is a formal independent review by FERMCO personnel to ascertain that the subcontractor's project management systems, documentation, design, execution and operations preparation appears to be adequate to safely commence operations. The project cannot commence operations until startup approval is obtained from FERMCO.

C.5.4.2.5.1 Activities Requiring SSR

The following subcontractor activities will require an SSR and subsequent Startup Approval from FERMCO before the subcontractor can commence operations:

a. Excavation of any material from any waste pit including movement of any waste pit material from waste pit area to stockpile area.

b. Segregation of waste pit material, including movement of material from stockpile area to segregation area.

c. Movement of waste pit material from segregation area, dryer area or stockpile area to railcar loading area or to dryer area.

d. Operation of dryer facility.

e. Operation of shredder and/or sorting facility.

f. Loading of material into railcars and containers.

C.5.4.2.5.2 Ready to Operate

The SSR will start when the subcontractor formally declares to FERMCO in writing that the treatment systems is ready to operate and all of the supporting documentation and training is complete. The "Ready to Operate" Letter will specifically state which of the six (6) activities requiring an SSR are ready to operate. An SSR can be done on individual activities or groups of activities. The subcontractor's readiness will be evaluated against the following Core Requirements (CR) from DOE Order 425.1.

a. (CR 1) There are adequate and correct procedures and safety limits for operating the process systems and utility systems.

b. (CR 2) Training and qualifications programs for operations and operations support personnel have been established, documented, and implemented (the training and qualification program encompasses the range of duties and activities required to be performed).

c. (CR 3) Level of knowledge of operations and operations support personnel is adequate to support safe operations.

d. (CR 4) Facility safety documentation is in place that describes the "safety envelope" of the facility. The safety documentation should characterize the hazards/risks associated with the facility and should identify mitigating measures (systems, procedures, administrative control, etc.) that protect workers and the public from those hazards/risks. Safety systems and systems essential to worker and public safety are defined and a system to maintain control over the design and modification of facilities and safety-related utility systems is established.

e. (CR 6) A process has been established to identify, evaluate, and resolve deficiencies and recommendations made by oversight groups, official review teams, audit organizations, and the operating subcontractor.

f. (CR 8) Management programs are established, sufficient numbers of qualified personnel are provided, and adequate facilities and equipment are available to ensure operational support services (e.g., training, maintenance, waste management, environmental protection, industrial safety and hygiene, radiological protection and health physics, emergency preparedness, fire protection, quality assurance, criticality safety, and engineering) are adequate for operations.

g. (CR 10) An adequate startup or restart test program has been developed that includes adequate plans for graded operations testing to simultaneously confirm operability of equipment, the viability of procedures, and the training of operators.

h. (CR 11) Functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented with line management responsible for control of safety.

i. (CR 12) The implementation status for the project CONDUCT OF OPERATIONS program is adequate for operations.

j. (CR 13) There are sufficient numbers of qualified personnel to support safe operations.

k. (CR 14) A program is established to promote a project-wide culture in which project personnel exhibit an awareness of public and worker safety, health, and environmental protection requirements and , through their actions, demonstrate a high priority commitment to comply with these requirements.

l. (CR 19) The technical and management qualifications of subcontractor personnel responsible for facility operations are adequate.

C.5.4.2.5.3 <u>Subcontractor's Specific Requirements to Support the SSR(s)</u>

The following are specific requirements for time and or services the subcontractor must supply to support the SSR:

a. Provide controlled copies of all project documentation on-site. Typical documents required by SSR Team include engineering drawings of facilities and related design documents, Project Execution Plans, Operating Procedures, other procedures related to project, training records and plans, and machinery specifications and vendor technical reference manuals.

b. Provide a central subcontractor point of contact to coordinate between the subcontractor and SSR Team to facilitate obtaining additional documents for review and to coordinate interviews with subcontractor personnel.

c. Provide subcontractor personnel as requested by the SSR Team for interviews about the project; this includes subcontractor operators and design and support personnel. Level of knowledge interviews with project operators typically range from 20-30 minutes per person, and cover all aspects of the operational phases of the operation (but not the design phases). Length of interviews with other project personnel will be commensurate with the individual's responsibilities to the project and the level of readiness determined as the interview proceeds.

d. Allow approximately eight (8) working days for conduct of each SSR (time from subcontractor declaration of readiness until completion of SSR.

e. Allow a waiting period of three (3) working days from the end of each SSR until receipt of startup approval authority. This is to allow FERMCO time to obtain higher level approval authority to proceed.

C.5.4.2.5.4 Startup Approval Authority

Startup approval authority for this project will be given by FERMCO upon verification that all pertinent requirements and regulations have been met. This verification takes place through the SSR process previously described.

The subcontractor may not commence the activities/operations described above until receipt, in writing, of Authority to Operate from FERMCO.

C.5.4.2.5.5 SSR Corrective Action

The subcontractor is required to correct deficiencies noted by the SSR Team prior to the indicated milestone (typically, prior to starting operations for 'pre-start' findings).

If, during the conduct of the SSR, FERMCO determines that the condition of readiness of the project is such that further conduct of the SSR is impeded, FERMCO will write a letter to the subcontractor explaining the impedance, and additional time will be allowed for further project preparation prior to the subcontractor declaring Readiness to Operate again.

Once all required corrective actions have been completed to the satisfaction of both the FERMCO and the subcontractor, the subcontractor shall send a "Readiness to Proceed" letter to FERMCO. This letter requests Startup Approval be given for the subcontractor to commence operations.

FERMCO will send the subcontractor a "Startup Approval" letter, after FERMCO has completed review of SSR report and associated corrective action documentation, and FERMCO has received approval by the DOE Startup Approval authority (if required).

C.5.4.2.5.6 SSR in Eventuality of a Project Re-start

If a project operation(s), once started, is shut down due to regulatory mandate or due to significant occurrences, a SSR may be required prior to restarting operations on the project. FERMCO retains the final authority for determining the necessity of a re-start. Should a re-start SSR be required, the process is the same as described herein for the initial SSR.

For an activity for which a SSR was required initially prior to beginning operations: If for any reason project operations, once begun, cease for a period exceeding six (6) months, another SSR will be required to be completed prior to recommencing operations for the activity. Project shutdown for less than six (6) months may require a restart SSR if a significant number of key project personnel have been replaced with different personnel.

C.5.4.3 Pre-Operational Programmatic Submittals

C.5.4.3.1 Standing Orders Manual

The subcontractor is required to prepare a program document which describes how the principles of CONOPS are integrated into the project. A suggested format for this document is a Project "Standing Orders" book per FERMCO Procedure OP-1001, which addresses CONOPS requirements in each of the eighteen applicable areas for each of the four major project areas.

C.5.4.3.2 Operator Training Program Plan

Training programs at the FEMP shall be designed such that periodic demonstrations by the students to show achievement of a level of comprehension which is commensurate with their job duties and responsibilities, as identified by the subcontractor in their operator training program is shown. The subcontractor shall prepare the actual Operator Training Program Plan.

The Operator Training Program Plan shall be comprehensive in scope. It shall present a methodology for the delineation of all project personnel. This methodology shall include a description of project personnel's titles, their various duties and associated training requirements, how those training requirements will be met, and what training courses, to include individual lecture/on-job-training sessions, training manuals, audio-visual aids, and other course materials will be required to achieve project personnel training.

C.5.4.3.2.1 Plan Contents

The Operator Training Program Plan shall contain and address the following information:

a. Identification and definition of the performance based training goals and how those goals will be achieved; what will constitute satisfactory student training performance and comprehension; and the specific interval, or requalification period, for student retraining and certification.

b. Operator Classifications - a comprehensive list of all operator labor classifications, and the minimum requirements and standards necessary for an operator to successfully qualify and maintain qualification in that labor classification.

c. Training Procedures - a set of training procedures shall be developed/adapted to adequately address all aspects of the subcontractor's operator training program.

d. Training Program Objectives - objectives, to include minimum operator standards which clearly define training goals and how those goals will be achieved shall be described.

e. Learning Objectives - objectives which specify measurable behavior that a student should be able to demonstrate following completion of training.

f. Records Management Methods - the organizational structure of all training records, including course files (active or research), attendance tracking, and determination,

method of tracking recertification needs, and satisfactory/unsatisfactory training course documentation.

g. Training Aids - includes all training course manuals, outlines, handouts, audio-visual aids, and equipment.

h. Training Program QA/QC - what measures will be used by the training program to ensure that all training program objectives are being satisfactorily met.

i. References - source documents for all aspects of the Operator Training program.

j. For scheduling purposes, the subcontractor shall identify the total numbers of students, by job description or job classification anticipated to be taught annually, and throughout the active term of this subcontract. Further, the subcontractor shall identify what constitutes a minimum number of students for each training course to be taught.

C.5.4.3.2.2 Lesson Plans

From the Operator Training Program Plan, the subcontractor shall develop and prepare individual Lesson Plans. A lesson plan is a narrative description of a particular course lecture/on-job-training session. Lesson plans serve to demonstrate detailed information about course curricula and training methods. At a minimum each lesson plan shall consist of the following components:

a. Course Objectives
b. Enabling Objectives
c. Terminal Objectives

The Lesson plans shall describe how the instructor will achieve all course lecture/on-job training session objectives, and include all equipment, training aids, handouts, and references.

C.5.4.3.2.3 Approvals

All Operator training program materials shall be prepared in such a manner that review and approval by FERMCO is achievable. If the subcontractor has a training program, Training Plan, and Lesson Plans which can fulfill the substantive requirements of the FERMCO Training Program, plus any identified minimum standards, then this information may be satisfactory.

At a minimum the Operator Training program shall meet the following FERMCO requirements:

a. TR-0001, Exemption from Initial Training
b. TR-0002, Conducting a Job and Task Analysis
c. TR-0003, Instructor Qualification
d. TR-0004, Fernald Sitewide Training Procedure
e. TR-0005, Job/Procedure Briefings
f. TR-0006, Training Rosters
g. TR-0007, Evaluation of Training
h. TR-0008, Training Materials Development and Approval
i. TR-0009, Development and Implementation of Training Programs
j. TR-0010, Extension of Qualification Procedure

k. RM-0002, Training Department Program Manual
l. RM-0003, Unclassified Computer Security Program Manual
m. RM-0004, Technical Support Staff Selection, Training, and Qualification Program
n. RM-0005, FEMP Lot Marking and Color coding system
o. RM-0007, FEMP Respiratory Protection Requirements Manual
p. RM-0011, Control of Occupational Exposure of Bloodborne Pathogens
q. RM-0012, Quality Assurance Program Description
r. RM-0013, Fire Protection Requirements Manual

C.5.4.3.3 System Start-up and Proof of Process Test Plan

A Startup Plan will be prepared as a deliverable to FERMCO and DOE to fulfill this requirement. The Startup Plan addresses the overall scheme for activation of a facility or system from the end of construction to final turnover to operations. The Startup Plan identifies the systems requiring the start-up test, provides the schedule for testing, identifies the responsible personnel, and establishes lines of authority. It also provides a vehicle for obtaining FERMCO concurrence on schedule and manpower requirements. Performance criteria and testing and evaluation procedures for start-up testing shall also be included.

SECTION C.6

OPERATIONAL PHASE TECHNICAL REQUIREMENTS

This section contains the technical requirements for the operation and maintenance of the subcontractor's remediation facility as defined in Section C.3.2.2. Submittals to be provided by the subcontractor in addressing these technical requirements are identified in Section C.6.3.

C.6.1 SECTION INCLUDES

a. Maintenance of Existing Facilities

b. Excavation

c. Blending

d. Stockpiling

e. Segregation

f. Dewatering or Pre-drying

g. Size-Reduction

h. Waste Transferring and Handling

i. Thermal Drying

j. Railcar Loadout

k. Railcar Liners and Covers

l. Alternative Waste Production Strategy

m. Non-typical Waste Streams

n. Contingency Planning and Emergency Response

o. Inspections and Maintenance

p. Environmental Controls

q. Sampling and Analysis

r. Shut-down

C.6.2 TECHNICAL REQUIREMENTS FOR OPERATION AND MAINTENANCE

The following technical requirements correspond, in general, to the unit operations from FERMCO's previous design effort discussed in Section J.2.10 of Attachment J.2. Requirements related to any other unit operations proposed by the subcontractor will be addressed during post-proposal discussions. The Operating Plans Crosswalk discussed in Section C.6.3.1.3 will be required to identify the documents or sections of documents that incorporate these requirements.

C.6.2.1 Maintenance of Existing Facilities

Plans for maintenance of existing facilities located within the subcontractor's work area that were implemented during mobilization and specified in Section C.6.3.1.1 will be continued during the operations and maintenance phase. These plans may be revised as necessary to accommodate the changing site conditions. Plans will be submitted to FERMCO upon modification.

C.6.2.2 Excavation

a. Phase I - Neat Line Excavation: Phase I excavation includes the waste pit caps, waste, and liners. The bottom of the waste pit liners are defined on the waste pit construction drawings (Figures C.5-1 and C.5-2) and the schematic on Figure C.5-3. The volume estimate for Phase I is in Table C.5-1. All of this material, shall be disposed at the PCDF except for certain non-typical waste (Section C.6.2.13) where a suitable form of treatment is not available.

b. Phase II - Directed Excavation: Phase II excavation will be directed by FERMCO and will continue, in lifts not less than 6-inches in depth, until the Final Remediation Levels (FRLs) are met. FERMCO will direct the excavation based on data from field screening instruments and laboratory samples collected and analyzed by FERMCO in accordance with the FERMCO sampling and analysis plan. Field screening techniques will cover one acre per day when mobile equipment is used and only one acre per week where a high density Germanium detector must be used. Turnaround time for laboratory sample analysis and data review by the EPA may be as long as six months.

   As a basis for the subcontractor's bid, it should be assumed that approximately 3-feet of soil below the Neat Line Excavation will be excavated during Phase II (see volume estimate in Table C.5-1) and that half of the soil will be disposed of with the waste and half will be disposed of in the OSDF. Refer to Section C.5.1.2.2.3 for more information about the disposition of this soil.

c. Material that is excavated using a slurry system shall have secondary containment.

d. Run-on control measures shall be implemented, to the extent practicable, to reduce the volume of contaminated water sent to treatment. Existing perimeter stormwater controls shall be kept intact.

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e. Any free standing water shall be removed from the excavation to minimize infiltration of contaminated water to the soil and aquifer below the pits.

NOTE: Water entering the excavation will include leachate from saturated zones within the waste and possibly water from perched water zones surrounding the waste pit area. Refer to the OU1 RI and DEEP report for more information concerning ground water.

f. Dewatering and excavation activities may occur simultaneously.

g. Treatment of the water collected from the excavation shall, as a minimum, include removal of suspended solids prior to discharging the water to the BSL (see Section C.5.1.2.3 for the discharge criteria for water pumped to the BSL). The Clearwell may be used as a retention basin for solids removal, however, it is recommended that gross concentrations of suspended solids be removed prior to the Clearwell in the excavation.

h. Airborne dust emissions shall be minimized or eliminated during pit excavation by meeting the criteria included in Ohio Administrative Code (OAC) 3745-31-05, which includes the use of Best Available Technology (BAT) to control emissions (see Attachment J.4.2). Trucks used for transporting dry waste shall have protective measures to control dust dispersion.

C.6.2.3 Blending

Blending includes mixing of waste and contaminated soil with mixers, pugmills, front-end loaders, or other mechanical devices to create a homogenous blend that will satisfy the PCDF WAC and material handling requirements of the subcontractor's process.

a. Waste from one pit may be mixed with waste from another pit or with contaminated soil (contamination levels > FRL) to improve workability or to meet the WAC for the PCDF for the radiological or moisture content criteria.

b. Blending cannot be done for the sole purpose of diluting characteristically hazardous waste to render it non-characteristically hazardous.

c. The final waste product to be shipped to the PCDF shall meet the LSA-I criteria as defined in 49 CFR 173.403.

d. All ARARs, including those pertaining to dusting and stockpiles, shall be complied with.

C.6.2.4 Stockpiling

Stockpiling includes, but is not limited to, staging areas, storage bins, and surge piles used in the process area. Stockpile volumes shall not exceed the limits determined necessary to maintain the Other Industrial hazard category as defined in Attachment J.3.2.

Stockpiles generated during the course of the project shall be managed in accordance with the ARARs addressing waste piles listed in Attachment J.4.1 ARARs. Specific substantive requirements include:

a. Run-on/run-off control systems shall be designed and installed to prevent flow onto or runoff from the active pile during peak flows from a 25-year, 24-hour storm event.

b. Collection and hold facilities associated with run-on/run-off control systems shall be emptied after storms.

c. Piles shall be covered or otherwise managed to prevent wind dispersion.

d. Waste piles shall be inspected weekly and after storms to ensure the integrity of run-on/run-off controls.

e. All stockpiled material shall be processed prior to any scheduled shutdown. In the event of an unscheduled shutdown stockpiled material shall be protected from wind erosion and subsequent dispersion of material.

C.6.2.5 Segregation

Segregation includes, but is not limited to, any separation of a portion of the waste stream for specialized handling and/or processing (e.g., material segregated for shipment to NTS).

Debris that cannot be processed through the primary treatment process shall be segregated from the waste and size-reduced in accordance with the PCDF WAC (Attachment J.4.4). Items identified for segregation include, but are not limited to, large structural steel, uranium derbies and/or metal, any unopened drums or containers , intact bags of asbestos and enriched (or fissile) material. These items do not conform to, or cannot be processed to conform to the WAC of the PCDF.

C.6.2.6 Dewatering or Pre-drying

Dewatering or pre-drying includes, but is not limited to, any dewatering of waste through mechanical means, air drying, or free drainage. Any wastewater generated during dewatering shall be collected and treated to meet the criteria described in the Section C.6.2.16.2.

Information and data pertaining to the settling and filtration characteristics of the waste is contained in the Settling and Filtration Study Report (see Section J.2.10 of Attachment J.2).

C.6.2.7 Size-Reduction

Size-reduction includes, but is not limited to, any process that is used to reduce the size of any waste material to meet the PCDF WAC. Due to the potential ignition of pyrophoric uranium, portable fire extinguishers (Class D, Metal-X™ is the preferred agent) for use on metal fires shall be placed near the size-reduction equipment.

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C.6.2.8 Waste Transferring and Handling

Waste transferring and handling includes, but is not limited to, the transfer of waste from one piece of process equipment or process area to another. All waste transfer and handling shall meet the dust suppressions requirements of OAC 3745-17-07(B) and OAC 3745-17-8(B) defined on Table 1 of Attachment J.4.2.

C.6.2.9 Thermal Drying

a. In accordance with the Ohio EPAs definition of a sludge dryer, no thermal combustion shall take place in the dryer. The dryer shall be an enclosed thermal device with a maximum total thermal input of 2500 BTU/lb of waste treated on a wet basis, excluding the heating valve of the waste.

b. The drying chamber shall be sealed and maintained under a negative pressure to minimize the release of pollutants to the environment. Exhaust from the drying chamber and the furnace shall be treated in accordance with the requirements in Section C.5.1.2.4, "Air Emission Limits".

c. The drying system shall conform to all applicable fire and safety codes and standards.

d. In keeping with DOE Order 6430.1A sections 1525-4 and 1555-2.6.8, all conductive surfaces shall be designed to stay at or below 125°F, and all nonconductive surfaces such as insulation or plastic shall be designed to stay at or below 150°F. If this cannot be achieved, a protective guard shall be supplied to keep personnel from contacting such surfaces.

e. The dryer shall use natural gas (supplied by FERMCO) or fuel oil as fuel for the dryer burners.

C.6.2.10 Railcar Loadout

a. Waste shall be loaded into railcars provided by FERMCO at a rate that will satisfy the yearly production rates specified in the Pricing Schedule, Section B.2 and will not exceed the physical or supply limitations of the railcars specified below:

b. For the operating period from 1998 up to and including 2000, 51 railcars will be available for loading every 21 days. For the operating period from 2001 up to and including 2004, 60 railcars will be available for loading every 16-days.

c. A maximum of two sets of 4 railcars can be loaded each day.

d. FERMCO will place up to four railcars, depending on the subcontractor's requirements, on Track 13, south of the load-out facility, twice per day, Monday through Friday. The first group of railcars will be delivered by approximately 8:30 a.m. FERMCO will remove the first group of full railcars at approximately 1:00 p.m. and deliver the second group of empty railcars about 1:30 p.m. If the subcontractor must reschedule delivery or the pick-up of railcars or desires delivery

or pick-up during a FERMCO holiday or on a weekend, the subcontractor must notify FERMCO at least 24 hours in advance.

e. Each standard railcar has the following capacity limitations:

f. Maximum net cargo weight: 106.2 tons

g. Maximum volume: 103 cubic yards (no freeboard).

h. Each railcar shall be loaded to the first applicable following tolerance:

1) 100 percent of maximum weight, -2 percent to +0 percent

OR

2) 85 percent of maximum volume, ± 2 percent.

i. Railcars may be loaded with mobile earth moving equipment provided the fugitive emissions are controlled and within acceptable levels.

j. The exterior, wheels, brakes, and other exposed sections of the railcars and all track sections shall be fully protected during all loading operations and at any other time processed waste materials have the potential to contact the railcar exteriors. Thorium contaminated materials contacting the exterior of railcars will require decontamination and disassembly for radiological surveys necessary to meet the radiological release requirements contained in Attachment J.3.4.

C.6.2.11 Railcar liners and covers

The railcars provided by FERMCO will be low sided gondola cars with top cord dimensions of approximately 10.5 to 11 feet wide, and 49.5 to 54.5 feet long (final dimensions to be determined later after procurement).

a. The railcars shall be lined and covered. The design requirements for the liner and hard cover shall satisfy DOT regulations 49 CFR 17, 427, and 174.700(g)(1), which specify that LSA material be transported in a "strong tight package" in a closed transportation vehicle, under exclusive use conditions. A strong tight package is a package that will prevent the release of any radioactive material under normal transport conditions.

b. The railcar liners shall be folded over the waste after loading and secured to prevent dispersion of waste from any wind currents generated under the cover during transport.

c. The railcar liners shall be 3-ply laminate with two layers of linear low density polyethylene and a high strength cord, Reef Industries, Model Griffolyn TX-1200 FR or equivalent.

d. The railcar hard covers shall meet the following specification:

e. Cover, installed on railcar, shall meet DOT criteria specified in 49 CFR 173.403(c).

f. Reusable, rigid, modular fiberglass construction for use on open-top gondola car, ECOFAB railcar cover or equal.

g. The cover shall include manual locking mechanism, ECOFAB or equivalent.

h. A system for continual and preventative maintenance shall be included to guarantee reliable and safe use. This maintenance system shall recognize the restrictions required when working with low-level radioactive waste in transportation.

i. The cover shall fit over the top cord of the railcar.

j. Lid placement and removal mechanism shall be ECOFAB or equivalent.

C.6.2.12 Alternative Waste Production Strategy

If the subcontractor is unable to produce waste through the treatment facility to meet the July 1, 1998 deadline for waste loading, the subcontractor shall devise and implement a plan to load waste into railcars that does not require treatment to meet the PCDF WAC. Contaminated soil from other OU's, excess material from waste pit access ramp construction, or waste pit cap material are likely sources of material that would pass the WAC for the PCDF without thermal drying. The subcontractor shall clearly state in the proposal how the load-out deadline will be met and if an alternative waste production strategy will be planned and/or implemented.

If an alternative waste production strategy is adopted the same submittal requirements apply as for the fully operational approach. In addition, the subcontractor shall structure its Operations and Maintenance Plan (Section C.6.3.1.1) to include an acceptable method for early load out of waste material that meets the WAC for the PCDF.

C.6.2.13 Non-typical Waste Streams

During the excavation of the waste pits the subcontractor has the potential of encountering non-typical waste streams that will require special planning, handling, treatment, and disposal considerations. Below is a listing of the materials that could potentially be encountered during the subcontractor's operations. The subcontractor shall address any special material handling, treatment, and/or disposal proposed for each of the following non-typical waste streams in its Operations and Maintenance Plans.

a. Pyrophoric materials (e.g., uranium metal)
b. Compressed gas cylinders
c. Transformers
d. Unopened, intact drums
e. Characteristic RCRA wastes
f. PCB wastes
g. Large debris (mechanical equipment or reinforced concrete)
h. Thorium metal/oxides

Realizing that it may not be feasible to treat or otherwise make acceptable to the PCDF all non-typical waste streams, FERMCO requires at a minimum that the subcontractor place the non-typical waste streams in a safe, stable configuration utilizing best management practices prior to packaging in FERMCO supplied white metal boxes (see Section C.5.1.2.2.1, for packaging requirements).

C.6.2.14 Contingency Planning and Emergency Response

Contingency Planning and Emergency Response is a task shared by both FERMCO and the subcontractor. FERMCO's Emergency Plan is used in case of emergency and the FERMCO Emergency Response Team (ERT) will respond to any emergency situation in the project area including but not limited to fire, personnel injury, or spills. The use of the FERMCO Emergency Plan and the ERT is discussed further in Section J.3.3. The subcontractor shall be responsible for informing the appropriate FERMCO personnel (e.g., Emergency Duty Officer, etc.) in the event of an emergency. The subcontractor is also responsible for preparing, and if necessary implementing, a specific contingency plan for the project. The requirements for the Contingency Plan are contained in the following DOE Orders:

a. DOE Order 5500.1B "Emergency Management System"

b. DOE Order 5500.3A, "Planning and Preparedness for Operational Emergencies"

The purpose of the contingency plan prepared by the subcontractor is to protect the subcontractor and FEMP employees and the local community in the event of an emergency incident during implementation of remedial action. The FEMP Emergency Plan (PL-3020) addresses the emergency management program, provides guidance for all emergency responders (including employees), ensures adequate performance for critical systems, and meets regulatory requirements. The subcontractor shall review the FEMP's Emergency Plan and prepare a Contingency Plan for the scope of work to be performed. The Contingency Plan shall be incorporated into the Operations and Maintenance Plan. This Contingency Plan shall complement, interface with, and reference, as appropriate, the FEMP Emergency Plan.

FERMCO maintains the necessary emergency plans and procedures to adequately address an emergency situation. During off-normal events, FERMCO will take over the subcontractor's processing area and will implement appropriate actions, with direct input from the subcontractor, as directed by the Emergency Duty Officer (EDO) or Assistant Emergency Duty Officer (AEDO) and Emergency Response Team (ERT). The FERMCO Emergency Duty Officer will also be called in to log unplanned nonlife-threatening events, such as a pipe or valve leak. The specific requirements for notification of the EDO or AEDO are discussed further in Section J.3.3.

C.6.2.15 Inspections and Maintenance

Inspections and maintenance of systems and equipment by the subcontractor are expected to be required on a routine basis and shall be planned before commencing operations. Emergency maintenance activities shall be coordinated with FERMCO for remedy as soon as possible. Inspections of systems carrying waste shall be conducted by the subcontractor on a regular basis to verify the continued integrity of equipment.

C.6.2.16 Environmental Controls

C.6.2.16.1 Air Emissions Control

a. The dryer off-gas system shall be capable of reducing the contaminant concentrations in dryer off-gas to below the regulatory emissions limits. The emission limits must be determined by FERMCO using FEMP sitewide air model and the subcontractor's predicted off-gas concentrations and specific design data such as the stack height and off-gas volume. Off-gas limits that were determined by FERMCO and the basis for the dryer system presented in the previous FERMCO design effort are presented in Section C.5.1.2.4.

b. Fugitive emission controls shall comply with the identified ARARs for the project listed in Attachment J.4.1.

c. Water or other substances used for dust suppression shall not increase the concentration of contamination in the area where the water is being applied. Clean water (e.g., precipitation collected from roof drains or treated water) shall be used as a dust suppressant in areas that are not in direct contact with the waste such as the portion of the process area outside of the foot-print of the process system. Stormwater may be used as a dust suppressant on contaminated areas such as contaminated haul roads, waste piles, or the waste pit excavation face. Other suppressants including chemical foams, resins, and polymers may be used to control dust if they are previously approved by FERMCO (see also Section C.5.2.2.14).

C.6.2.16.2 Wastewater Controls and Integration

a. Wastewater includes, but is not limited to, water that free drains from the pit waste in the excavation or during storage (e.g., waste in stockpiles), water that enters the excavation either from surrounding perched water tables or from precipitation, condensed water vapor, decontamination water and off-gas system bleed streams.

b. Wastewater shall be pretreated as necessary to meet the WAC of the existing FEMP's Advanced Wastewater Treatment (AWWT) system (see Section C.5.1.2.3).

c. After pretreatment and sampling to confirm compliance with the waste acceptance criteria, the wastewater shall be discharged to the BSL. The BSL is the receiving basin for the AWWT.

C.6.2.16.3 Stormwater Controls and Integration

a. Stormwater includes any runon or runoff in the process area.

b. The subcontractor shall, at its expense, provide suitable facilities to prevent the introduction of any substances or materials into any stream, lake or other body of

water which may pollute the water or constitute substances or materials deleterious to fish and wildlife.

c. New stormwater management systems shall be designed for the 25-year, 24-hour storm per FEMP site policy. (See "Rainfall Frequency Atlas of the U.S.," Technical Paper 40, U.S. Department of Commerce for levels for this storm event for the FEMP.)

d. Open channels will use the 5-year storm for evaluating velocity. (See "Rainfall Frequency Atlas of the U.S.," Technical Paper 40, U.S. Department of Commerce for levels for this storm event for the FEMP.)

e. Stormwater management basins will be designed to safely pass the 100-year, 24-hour storm. (See "Rainfall Frequency Atlas of the U.S.," Technical Paper 40, U.S. Department of Commerce for levels for this storm event for the FEMP.)

f. Storm drain systems not directly connected to the stormwater management system, with catchments less than 160 acres, may be designed by the rational method.

g. Those storm drain systems directly connected to an existing stormwater management system shall be designed by SCS methods (e.g., TR-55, TR-20). No storm drains currently exist in the work area that drain to the existing stormwater management system.

h. Design details, construction methods, and materials shall be in accordance with ODOT standards.

i. Stormwater shall be used for washing or dust control, where feasible, to minimize the volume of water requiring treatment.

C.6.2.16.4 Groundwater Aquifer Protection

The subcontractor is responsible for conducting their operations and activities in such a manner as there is no impact to the groundwater aquifer underlying the waste pit area. During excavation of the waste pits the subcontractor is likely to encounter groundwater, particularly from shallow perched groundwater. The subcontractor must be aware of this possibility and shall design systems to control groundwater infiltration and plan the remediation activities in such a manner that the presence, control, and disposal of groundwater does not become an operations problem.

C.6.2.16.5 Erosion and Sediment Control

Permanent and temporary measures shall be implemented by the subcontractor to prevent erosion (both wind and water) and control sediment during operations. Rainwater and Land Development: Ohio's Standards for Stormwater Management, Land Development and Urban Stream Protection, Second Edition, Ohio Department of Natural Resources (ODNR) Division of Soil and Water Conservation, Columbus, Ohio, 1996 [FORMERLY U.S. Department of Agriculture-Soil Conservation Service (USDA-SCS), Water Management and Sediment Control

in Urbanizing Areas, U.S. Department of Agriculture, Soil Conservation Service, Washington, D.C., 1987] shall be used as a guideline for establishing erosion and sediment control. The only exception to this policy is that straw bails should be used instead of rock to control sediment in order to reduce the amount of waste generated.

C.6.2.17 Sampling and Analysis

To comply with FERMCO air and water permits and to attain proof that the waste meets the WAC for the PCDF, a Sampling and Analysis Plan (SAP) is required. This plan shall be submitted to FERMCO for review and approval by FERMCO, DOE, and the EPAs. This section provides the sampling and analysis requirements for the remediated waste to meet the PCDF WAC, for the process wastewater and contaminated stormwater to meet the WAC of the AWWT, and for emissions from the dryer off-gas system to meet the emission limits.

The subcontractor will maintain a quality sampling and analysis program which will produce valid, defensible data in accordance with applicable federal, state, and local regulations. Sample collection and laboratory analysis are the responsibility of the subcontractor, including but not limited to:

a. Sampling and analysis plan to meet EPA, PCDF and other waste characterization requirements

b. Field sampling

c. Laboratory and analytical services

d. Sample custody and control

e. Laboratory selections, control, and management

f. Laboratory cost

g. Laboratory data management

h. Turnaround times and sample flow

i. NRC license verification

j. Selection of analytical protocol to meet waste acceptance criteria

k. Sample shipment

l. Laboratory waste management

Sections 9 and 12, and Appendices E and G of the SCQ, provide the requirements for analytical methods and laboratory practices (Attachment J.4.33).

At any time, the PCDF, FERMCO and/or the EPAs may collect samples of the waste for independent analysis. FERMCO and/or the EPAs may also at any time, collect samples for

analysis to independently verify compliance with the AWWT WAC, air emissions limits, and other terms of this subcontract.

Prior to starting field activities, the SAP for remediated waste material shall be approved by the EPAs, FERMCO, DOE, and the PCDF.

C.6.2.17.1 Summary of Sampling and Analysis Activities

Processed waste samples are required to certify that material meets the PCDF WAC. Prior to discharge, process and runoff water shall also be sampled to certify that they meet the AWWT WAC. Process air emissions shall be monitored to ensure that the process is in compliance with all ARARs (see Attachment J.4.1).

C.6.2.17.1.1 Waste Sampling

The subcontractor shall be responsible for the following sampling and analysis activities. Samples shall be collected to certify processed and loaded waste shall meet the PCDF WAC.

Individual samples shall be representative of the waste stream. Sample frequency shall be based on the selected PCDF's WAC and the final design of the waste treatment system. For this subcontract, the frequency of sampling shall be one sample per railcar. The expected analytical parameter list for WAC acceptance is as follows. This list is subject to change based on the PCDF's WAC described in Attachment J.4.4.

C.6.2.17.1.2 Analytical Parameters

a. Radiochemical
isotopic analysis (constituents of concern)
gamma scan

b. Chemical Analysis
TCLP metals (8)
TCLP organics (32)
Paint Filter Liquid Test (PFLT)
pH
Sulfide released
Cyanide released
Proctor Density Test, ASTM D-698-91
Specific Gravity of Soil, ASTM D 854-91
Water Content of Soil, ASTM D 2216-92

C.6.2.17.1.3 Water Sampling

Prior to discharge from the subcontractor's work area, collected runoff water and water accumulated from processing the pit material shall meet the AWWT WAC. The subcontractor will conduct any sampling necessary to ensure compliance.

C.6.2.17.1.4 Air Monitoring Sampling

Air emissions from waste processing may contain a variety of radioisotopes, organic and inorganic, gases and/or particulates. The subcontractor is required to sample and analyze the dryer off-gas and emissions from any other point source for the constituents identified by the FERMCO site-wide dispersion model (Section C.5.1.2.4). The model identifies the constituents that would exceed the site boundary limit without treatment of the off-gas.

C.6.2.17.1.5 Process Control Samples

The subcontractor may choose to take process control samples to confirm that the processed waste shall meet the chemical, radiochemical, and physical requirements of the PCDF WAC prior, during, or after processing. A variety of screening and/or field methods are acceptable and suited for this purpose.

C.6.2.17.2 Source Documents: DOE Orders, SCQ, PCDF WAC, AWWT, 40CFR,10 CFR

DOE Orders 5700.6C and 10 CFR 830.120 require a Quality Assurance Program (see Attachment J.3.5) for generation of analytical data. FERMCO uses the Sitewide CERCLA Quality Assurance Project Plan (SCQ).

Analytical data generated for certification of FEMP waste disposal at the PCDF shall both meet the requirements of the PCDF as well as Sections 9 and 12, Appendices E and G of the SCQ.

Prior to the start of field activities, FERMCO, DOE, and the EPAs shall approve the SAP for remediated waste material for off-site disposal, subsoils for on-site disposal, fugitive and point source air emissions, and water discharged from the process area.

C.6.2.17.3 Technical Requirements

Sampling and analysis shall produce accurate and defensible data to certify that the waste generated meets the PCDF WAC. Samples shall be representative of the waste stream. Analytical methods, analyses, and quality control systems shall be qualified to produce defensible data. Analysts shall be experienced and qualified to perform the analytical methods. Subcontract laboratories shall be licensed to handle radioactive materials. Subcontract laboratories shall show competency in the analyses they preform. Data shall be presented in a format acceptable to the PCDF.

C.6.2.17.3.1 Analytical Methods

Analytical methods used shall be in accordance with the state certification requirements and acceptable to the PCDF. Costs of analytical services shall be provided to FERMCO upon request.

Air sampling and analysis methods for point source contaminants shall be USEPA-approved (40 CFR Parts 60 and 61) and based on air modeling (Section C.5.1.2.4).

C.6.2.17.3.2 Process control

Process chemical and radiological data is required to assure that the processed waste shall meet the PCDF WAC for radiochemical, physical, and chemical constituents.

Due to the nature of the pit materials, chemical and/or radiochemical screening, laboratory, or field methods may to be used for process control. All waste shipped shall meet the PCDF WAC. Blending of material is expected to remove radiological "hot spots" or adjust moisture content. Proposed screening methods are to be included in the SAP.

C.6.2.17.3.3 Sampling and Analysis Quality Control

Laboratory data will require both internal and external quality control. The subcontractor's laboratory shall maintain a quality control program for analytical, radiochemical, physical testing, and screening analysis in accordance with the State of Utah Laboratory Certification program and the requirements of Sections 9 and 12, and Appendices E and G of the SCQ (Attachment J.4.33). Laboratory control manuals from the subcontractor's laboratories and subcontracted laboratories shall be available for FERMCO or the PCDF's review upon request.

C.6.2.17.3.4 Laboratory Data Management

All laboratory data becomes the property of DOE at the completion of the project. A data management system shall be in place to track generated analytical data. The system shall be accessible to DOE and/or FERMCO throughout the project, in an electronic format that allows downloading of analytical data.

C.6.2.17.3.5 Laboratory Waste Management

Waste generated during the analysis of samples shall be managed by the participating laboratories on- or off-site in compliance with applicable State and Federal laws.

C.6.2.18 Shutdown

Shutdown of the operations shall be defined by three modes. These modes are defined by the reason for and the length of the shutdown and the required elements of the shutdown. A shutdown of thirty days or less is considered a project delay and will not be subject to the requirements of this section.

C.6.2.18.1 Shutdown Mode 1 is an Emergency Shutdown.

In the event of a catastrophic system failure or threat to human health, safety, or the environment, the shutdown of operations would be abrupt and immediate. All systems and operations shall be stopped and placed in a safe configuration and no equipment decontamination is required. This mode can be initiated by any project personnel in the event of threat to worker safety, public health, and/or the environment. Operations will remain shutdown until a mutual restart date is agreed upon by the subcontractor, FERMCO, DOE, and the EPAs.

C.6.2.18.2 Shutdown Mode 2 is a Short-Term Shutdown.

This would occur to repair or replace failed equipment, perform scheduled system maintenance, resolve technical problems, or wait for materials. This mode will be initiated by the subcontractor in coordination with FERMCO. A Short-Term Shutdown will last no longer than 6 months, after which restart of the operations and facilities will be initiated following DOE Order 425.1 and is discussed in Section C.5.4.2.5, Pre-operational Assessment Process. The operations will remain shutdown until a mutual restart date is agreed upon by the Subcontractor, FERMCO, and DOE.

Mode 2 shutdown requires the subcontractor to shutdown the processing equipment in a safe, controlled manner leaving all equipment, facilities, and/or process areas in a configuration that ensures safety of workers and protection of the environment. Upon entering into shutdown Mode 2, the subcontractor will be required to revise the Inspections and Periodic Maintenance Plan to include requirements for inspection and interim maintenance of shutdown equipment (i.e. turning motors and lubrication) to prevent deterioration of equipment and facilitate restart. The subcontractor shall perform any required periodic or routine maintenance during the shutdown periods as necessary to protect the equipment and facilitate rapid restart. The shutdown shall also ensure operations and facilities restart without major equipment replacements or maintenance delays.

C.6.2.18.3 Shutdown Mode 3 is a Long-Term (greater than 6-months) or Final Shutdown prior to facilities decontamination and dismantlement (D&D).

This mode of shutdown will be directed by FERMCO. This mode of shutdown requires the subcontractor to cease operations for a prolonged period of time, or at the completion of the project prior to the decontamination and dismantling of the equipment. Operations shall remain shutdown until a mutual restart date and restart approach are agreed upon by the subcontractor, FERMCO, and DOE. The restart of the operations and facilities after a Long-Term Shutdown will be comply with DOE Order 425.1 as discussed in Section C.5.4.2.5, Pre-operational Assessment Process. The operations will remain shutdown until a mutual restart date is agreed upon by the subcontractor, FERMCO, and DOE.

Mode 3 shutdown will require the subcontractor to shutdown the processing equipment in a safe, controlled manner to ensure all equipment, facilities, and/or process areas are in a configuration that ensures safety of workers and protection of the environment. Additionally, the internal components of equipment shall be emptied to the extent possible and decontaminated. During Shutdown Mode 3, except for final shut-down, the subcontractor will be required to revise the Inspections and Periodic Maintenance Plan to include requirements for inspection and interim maintenance of shutdown equipment (i.e. turning motors and lubrication) to prevent deterioration of equipment and facilitate restart. The subcontractor shall perform any required periodic or routine maintenance during the shutdown periods as necessary to protect the equipment and facilitate rapid restart. The Mode 3 shutdown, excluding final D&D, will also ensure operations and facilities restart without major equipment replacements or maintenance delays.

C.6.3 Submittals

Submittals required for the Operations and Maintenance phase of this project are described in this section.

C.6.3.1 Operations and Maintenance Work Package

Documents governing the operation and maintenance of the subcontractor's system will be included in the Operations and Maintenance Work Package. These documents can be submitted separately as schedule needs dictate, but are referenced here to establish the overall parameters and controlling documents for the operations and maintenance process. Several documents listed below are specifically requested in other sections of the Statement of Work, but are referenced here to provide a comprehensive of operations documents.

Specific documents to be contained in the Operations and Maintenance Work Package are outlined below.

C.6.3.1.1 Operations and Maintenance Plan

The Operations and Maintenance (O&M) Plan incorporates the operation of the subcontractor's treatment facility that has been constructed and is ready to operate.

The Operations and Maintenance Plan requires EPA approval prior to commencing operations. This document is referenced in 40 CFR Part 300.435. The purpose of this document is to provide the agencies with an understanding of the operation and the means for controlling operations and ensuring that worker health and safety and the environment are protected while conducting this remedial action. Many portions of the O&M Plan provide overviews of other, more comprehensive documents that will be prepared by the subcontractor.

The following list of issues shall, as a minimum, be addressed in the Operations and Maintenance Plan.

a. Description of operations and equipment

b. Process control plan describing:

   1) controlling limits and operating parameters

   2) methods for measuring parameters, monitoring components

   3) frequency of measurements and when, if so provided, to discontinue

   4) means for preventing and correcting deviations and incorporating results into operations

   5) plan for handling processed waste that does not meet waste acceptance criteria

c. Process flow diagram

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d. Site layout drawing

e. Description of Health and Safety controls

f. Contingency Plan containing:

1) list of potential problems that could be anticipated

2) plan for developing corrective actions and contingency operations to prevent undue hazard in the event of an failure

3) plan for emergency situations and emergency shutdowns

4) safety tasks required in event of systems failure (may be linked to site safety plan developed during remedial responses)

g. Maintenance of existing facilities plan containing:

1) description of inspection and maintenance activities to be performed

2) items to be inspected and maintained

3) frequency of inspections and maintenance activities

h. Suspect/Unknown/Pyrophoric Materials Handling

i. List of procedures and plans governing the project operations (Note: procedures will be made available for agency review upon request.)

j. Substantive Permitting Crosswalk (Attachment J.4.2)

k. ARARs Compliance Tables (Attachment J.4.1)

C.6.3.1.2 Operations Procedures

Operations procedures shall be developed in accordance with the guidelines contained previously in Section C.5.4.2.2. Operators shall be trained to these procedures in accordance with the training plan requirements specified in Section C.5.4.2.3. These procedures shall be submitted to FERMCO for conformance review.

C.6.3.1.3 Operating Plans Crosswalk

This crosswalk shall identify the SSR requirements (Section C.5.4.2.5.2) and the plans identified in Sections C.5.3.3 and C.6.3.3 that respond to each requirement. The crosswalk shall list also list the section of the plan that addresses how this requirement has been implemented. This document is to be provided with each submittal of operating procedures and plans if a change or update to the crosswalk is made as a result of the submittal.

C.6.3.1.4 Sampling and Analysis Plan

The SAP shall describe all sampling and analysis activities including methods to certify that the processed waste material will meet the PCDF WAC, to verify that discharged water will meet the on-site AWWT WAC, and to verify that fugitive and point source air contaminants are controlled. Methods of sample collection to achieve representative samples of the waste streams shall be described. Analytical methods for air, waste, and water analysis shall be listed. Screening or sampling methods for process control shall be described. Quality control for sampling and analysis shall be described, including internal and external (duplicate samples, blanks) QC and calibration of equipment. Sample chain-of-custody procedures and data management functions shall be described. Analytical data reporting format shall be described and shall be acceptable to the PCDF.

C.6.3.1.5 Operational Environmental Control Plan

The Operational Environmental Control Plan shall contain the following information.

a. Erosion and Sediment Control

1) description of the methods and materials to be used to prevent erosion of soil either by wind or surface water in the work area including a drawing showing the location of the erosion control features.

2) identify factors that contribute to erosion, runoff, and sedimentation, and provide specifics that the subcontractor will implement relative to providing, installing, and maintaining the erosion control of both the excavation area and the plant facilities area.

b. Dust Control

1) methods and materials to be used to suppress and minimize the creation and dispersion of dust

2) means for incorporating air emission monitoring results into the FERMCO air model prepared by the subcontractor as described in Section C.5.1.2.4.

c. Emissions Control

1) methods and materials to be used to ensure emissions from processing equipment meet ARARs and ALARA requirements.

2) plans for stack monitoring and air monitoring

3) means for incorporating air emission monitoring results into the FERMCO air model prepared by the subcontractor as described in Section C.5.1.2.4.

d. Stormwater/Wastewater Management

1) describe facilities, mechanisms, and procedures to be put in place by the subcontractor and/or managed by the subcontractor, to provide for the proper management of stormwater pursuant to the requirements in Section C.6.2.6.3.

C.6.3.1.6 Excavation Plan

The Excavation Plan shall define all activities, actions, and requirements necessary to properly and safely perform all excavation activities in conformance will applicable regulations and requirements. The Excavation Plan shall contain a description of processes to be used in the excavation of waste from each of the various waste units and transfer to the remediation facility. The plan will also discuss the needed coordination with FERMCO relative to the soils excavation, as discussed in Section C.6.2.2.

The Excavation Plan shall address, but not be limited to, the following topics:

a. overall excavation sequence and method/approach;

b. criteria (including slope stability and bearing capacity of the waste material) and assumptions;

c. profiles, sections, and details of the pits as they currently exist;

d. material handling considerations;

e. potential construction dewatering;

f. leachate and stormwater runon/runoff management and approach to minimize leachate infiltration to the aquifer;

g. excavation sequencing and processes to be used in the excavation of individual waste pits, with plans and sections;

h. manpower equipment selection for waste excavation and transport;

i. proposed stockpile areas for potential blending and segregation;

j. debris management and segregation;

k. air monitoring (specific sampling and analysis details should be included in the SAP);

l. dust and fugitive emissions controls;

m. equipment decontamination facilities and procedures; and

n. interim and final grading.

C.6.3.1.7 Inspections and Periodic Maintenance Plan

This document includes but is not limited to:

a. list of equipment inspections and required frequency

b. list of equipment or installed components requiring periodic maintenance

c. specifications, procedures or equipment manuals required to perform periodic maintenance

d. schedule for periodic maintenance or replacement of equipment and installed components

C.6.3.1.8 Operations Records

The following records shall be maintained by the subcontractor and submitted to FERMCO upon request. Records shall be maintained in accordance with the Quality Assurance Plan.

a. Daily Operating Logs

b. Laboratory Records

c. Personnel Training Records

d. Maintenance Records

e. Shipping Manifests

f. Work Permits (e.g., radiological work permits, confined space entry permits)

C.6.3.1.9 Environmental Monitoring Data

Results of environmental monitoring (e.g., air emissions) shall be provided to FERMCO at a frequency consistent with sampling and analysis frequency.

C.6.3.2 Health and Safety Plan for Remedial Action Operations Activities

Refer to Section J.3.3 for specific details on Health and Safety Plan.

C.6.3.3 Quality Assurance Plan

Refer to Section J.3.5 for specific details on the requirements of the Quality Assurance Plan, the schedule of audits, and surveillances to be implemented.

SECTION C.7

DECONTAMINATION AND DISMANTLEMENT PHASE TECHNICAL REQUIREMENTS

C.7.1 SCOPE

The purpose of this specification is to state the requirements for decontamination, dismantlement, and containerization for shipment of waste generated from the dismantlement of the subcontractor's facility used for the remediation of the Operable Unit 1 waste pits.

Although this section primarily focuses on decontamination and dismantlement (D&D) as it applies to disposal at NTS or the OSDF, the activities addressed herein can also be applied to the other disposal options identified in Section C.3.2.3, such as disposal at the PCDF. Table C.3-1 provides details and references relative to the requirements for each of the various D&D options available to the subcontractor.

C.7.1.1 Submittals

The subcontractor shall submit the following for approval by FERMCO:

a. Prior to the start of D&D activities, the subcontractor shall develop and submit, for review and approval by FERMCO, DOE, and the EPAs, an Implementation Plan for the D&D of the subcontractor's facilities. The Implementation Plan shall include a discussion of the key elements of the subcntractor's proposed D&D activities, including a scope of work, a description of the general approach to D&D (including sequencing, characterization, materials management and disposal, environmental monitoring, a summary of supporting drawings and specifications, etc.).

b. Prior to start of the D&D activities, the subcontractor shall develop and submit a detailed Safe Work Plan (Reference Section C.5.2.3) for all major activities to be performed, for concurrence by FERMCO. The plan shall include sections on Utilities Isolation, Waste Handling, Removing/Fixing Contamination, Interior Dismantlement, Equipment Dismantlement, Structural Steel Dismantlement and concrete Removal.

c. The subcontractor shall weigh each full container to verify for FERMCO that the container meets the weight limits specified in Section C.7.2.1.1 prior to moving full containers to the queuing area. Each container over the weight limit will be returned to the subcontractor for repackaging at the subcontractor's expense.

d. Product Data: The subcontractor shall submit manufacturer's technical information including the material to be used, its intended use, and its application instructions on materials and equipment utilized during work performance.

e. Catalog cuts, proposed location, method of installation of all hoisting equipment, and specialized construction equipment.

C.7.1.2 References, Codes and Standards

United States Department of Energy (DOE):

a. DOE 1540.2 Hazardous Material Packaging for Transportation Administrative Procedures.

b. DOE 5400.5 Radiation Protection of the Public and the Environment.

c. DOE 5480.2 Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Waste.

d. DOE 5480.11 Radiation Protection for Occupational Workers.

e. DOE/EH-0256T Radiological Control Manual, April 1994.

f. DOE/EM-0142P Decommissioning Handbook, Chapter 9, March 1994.

National Institute of Standards and Technology (NIST): Handbook 44 Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices.

American National Standards Institute (ANSI):

a. ANSI A10.6-90 Demolition Operations - Safety Requirements.

b. ANSI A10.8-88 Construction and Demolition Operations - Scaffolding - Safety Requirements.

c. ANSI A10.9-83 Construction and Demolition Operations - Concrete and Masonry Work - Safety Requirements.

d. ANSI A10.13-89 Construction and Demolition Operations - Steel Erection.

National Fire Protection Association (NFPA):

a. NFPA 101-94 Life Safety Code.

b. NFPA 241-93 Safeguarding Construction, Alteration, and Demolition Operations.

Ohio Administrative Code (OAC): OAC 3745-17-08 - Restriction of Emission of Fugitive Dust.

C.7.2 EXECUTION

C.7.2.1 Waste Handling Criteria

a. Dismantlement of the subcontractor's remediation facility shall be accomplished utilizing the requirements of this section. Dismantlement of the facilities will produce categories of waste as indicated in the Material Segregation and

Containerization Criteria (MSCC). Figures C.7-1 and C.7-2 are MSCC forms reflecting disposal at NTS and the OSDF, respectively.

b. Generation of unnecessary waste shall be minimized by unpacking equipment and material prior to entering the Controlled Area whenever possible. The minimum number of tools/equipment needed to complete the job should be brought into the Controlled Area. The subcontractor shall not bring any hazardous material into the construction zone unless prior approval is received from the FERMCO Technical Representative. Alternatives to hazardous materials shall be used whenever possible.

c. The subcontractor shall supply all equipment required to move containers from the queuing area (the FERMCO delivery and pick-up point) to the point of usage within the construction zone, as well as all equipment to prepare and fill containers.

d. The subcontractor shall establish an equipment and material release cleaning area within the radiological control area for cleaning equipment and demolition debris to the release criteria established in Section C.7.2.2. The release cleaning areas may be multiple in number to accommodate the items to be cleaned. Release cleaning activities are to be conducted within a building containment to mitigate impacts to the environment. Deviations to these requirements must by submitted to FERMCO for approval prior to work performance.

C.7.2.1.1 Containers

FERMCO will provide appropriate containers (except liquid storage tanks) for waste as identified on the MSCC (Figures C.7-1 and C.7-2), including, but not limited to, the following:

Container Design	Normal Exterior Dimensions - HxWxL	Minimum Gross Wt. lbs.	Maximum Gross Wt. lbs.
Large metal box (top load)	8'x8'x20'	36,000	42,000
ISO container (end load)	8'x8'x20'	36,000	42,000
Small metal box	3'x4'x6'	NA	8,000
Roll off box	7'x5.5'x22'	NA	42,000

C.7.2.1.2 Container Preparation

FERMCO will deliver empty containers, pallets (possibly radiologically contaminated), to the container queuing area.

a. The subcontractor shall establish a container queuing area in the location indicated on referenced drawings and provide a controlled boundary to define this area.

b. The subcontractor shall provide equipment required to prepare top-loading metal boxes as follows:

1) Remove lid and place in designated location to prevent damage.

2) Remove any freestanding water.

3) Place lid on the box and secure with clamping devices, pins, or other FERMCO approved method.

c. The subcontractor shall be responsible for retrieving empty containers from the queuing area; preparing containers, for packaging; segregating waste materials; loading, weighing, inspecting, and sealing containers; and transporting containers back to the queuing area.

C.7.2.1.3 Loading of Containers

The subcontractor shall:

a. Provide a waste handling supervisor to supervise all containerization operations.

b. Ensure that personnel containerize waste for movement and delivery to the queuing area in accordance with this specification.

c. Segregate and containerize all waste according to the categories defined in the applicable MSCC.

d. Select the appropriate container for the waste stream as indicated on the applicable MSCC. This form identifies all anticipated waste streams that will be encountered. Should a waste stream be discovered that is not on the applicable MSCC, then work on the handling of this waste will stop. Contact FERMCO for direction on how to containerize the waste while characterization is completed.

e. Fill containers, boxes, and drums such that the interior volume is as efficiently and compactly loaded as practical up to the maximum gross weight limit of the container or until full. Containers shall be weighed by the subcontractor during loading operations to ensure that the container does not exceed the maximum allowable gross weight of the container. Any container exceeding the maximum allowable gross weight shall have contents removed, as required, to lower the weight to an acceptable range. Containers shall be prepared to minimize load shifting or damage during transit.

f. Ensure that waste to be containerized is not on the following "Prohibited Materials List." This list shall be displayed in the packaging area or on each container. Notify FERMCO if any of the prohibited materials are identified.

PROHIBITED MATERIALS LIST

- Compressed gases (i.e., unpunctured aerosol cans)
- Explosives
- Free liquids
- Fine particulate (respirable fines)
- Hazardous waste
- Corrosive materials
- Etiologic agents

g. Notify FERMCO at least 24 hours in advance of loading containers.

h. Visually check waste for free liquid prior to loading. Ice is considered a free liquid. If free liquid is present or material is wet, appropriate action will be taken to absorb free liquid.

C.7.2.1.4 Movement of Containers

The subcontractor shall:

a. Move containers to the specific task location from the queuing area.

b. Ensure that the lid or doors on unfilled waste containers are secured when no packaging is in progress to prevent addition of unknown materials. Containers must be weather protected, when lid is not secured, to prevent entry of snow and rain.

c. Secure full containers.

1) ISO containers will be secured as follows using FERMCO-supplied material:

a) Place two sheets of plywood vertically in front of container doorway for shoring.

b) Roll absorbent pads (double-thick) together and place pads evenly along the lowest point of the opening (maintaining continuous contact with floor) in front of the plywood sheets.

c) Caulk door frame interior and inside edges of each door to provide a continuous seal.

d) Close the container doors immediately after caulking.

e) Close and latch doors, ensuring that all latching mechanisms are engaged.

f) Band doors securely together with 1-1/4 inch bands spaced approximately 2 feet apart around the center locking bars at mid-height of the container.

g) Secure each band with two double-crimp seals.

2) Metal boxes (large and small) will be secured as follows:

a) Inspect gasket for damage and repair if required.

b) Place gasket and lid on the box and secure.

3) Ensure that no liquids of any kind have been placed in containers, heavy or bulk items have been secured within the container with shoring, all available space has been utilized efficiently, prohibited materials have been excluded, ensure

container has not been damaged during loading, and the liner is in place and properly lapped and sealed.

4) Return full, secure containers back to the queuing area.

C.7.2.2 Removing/Fixing Radiological Contamination

Release cleaning of structures and equipment to the level that permits removal of local containment or enclosure includes, but is not limited to, the following:

a. Removing contamination.

b. Fixing contamination.

c. Containing, controlling and moving effluent produced during the removal and fixing of contamination.

C.7.2.2.1 Decontamination

a. Release cleaning of equipment, demolition debris, structures, etc., shall be to the requirements of this section for the OSDF, Attachment J.4.3 for shipments to NTS and Attachment J.4.4 for shipments to the PCDF, prior to containerization, surfaces shall be free of visible process material. FERMCO is to determine the existence of process material by performing a visual inspection. The definition of visible process material is: Visible process residues (such as dirt, dust) on the interior or exterior surfaces of materials that is obvious to the eye and that if rubbed, would be easily removed. Stains, rust, corrosion, and flaking do NOT qualify as visible process material. If an item fails visual inspection the items shall be encapsulated or wrapped in accordance with Section C.7.2.2.3 of this specification. All equipment, material, and debris are still considered to be radiologically contaminated.

b. Release cleaning shall take place prior to removing the exterior siding of a structure and prior to dismantling a structure where the exterior siding is not removed, all non-porous surfaces (such as steel decking or columns) within the structure shall be below 10,000 dpm/100 cm^2 for total (sum of alpha and beta-gamma) removable radiological contamination and below 5,000 dpm/100 cm^2 beta-gamma fixed radiological contamination. (For this purpose a 1 for 1 alpha vs. beta ratio shall be used)

c. All residual dust, particles, debris and rubble left over from the removal of demolition debris, equipment, masonry, steel and other appurtenances shall be collected and containerized. The subcontractor shall inspect, HEPA vacuum, and/or wipe-down the top of structural beams, columns, window frames, door headers, and any other surface where these items may accumulate.

d. Once the cleaning has been completed and the subcontractor has completed a visual inspection of the building, a survey shall be performed by FERMCO to determine the effectiveness of the cleaning. If the test fails, the subcontractor

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shall perform additional cleaning and/or encapsulation activities until the tests are acceptable.

SURVEY:

This survey collection pattern would divide the facility into sections. Within each section a defined number of samples would be collected from each surface type. The surveys would be collected from four (4) horizontal surfaces, two (2) vertical surfaces, and two (2) overhead surfaces. This uniform sampling pattern would ensure consistent representation of the grids.

e. For Thorium contaminated equipment, materials, or structures; the minimum requirements for the removal of the exterior siding shall be 100 dpm/100cm^2 for loose thorium contamination. For the purpose of removal from local containment or enclosure or for demolishing a structure, surfaces shall be below the level of removable contamination and below 10 times the level of total (fixed plus removable) contamination in the DOE Radiological Control Manual.

C.7.2.2.2 Decontamination Equipment

The subcontractor shall supply all equipment required to perform release cleaning operations.

The subcontractor will perform effluent testing. After approval from FERMCO, the subcontractor shall transport the liquid effluent to the Advanced Wastewater Treatment Facility and/or pump the liquid effluent into a FERMCO approved sump.

a. The subcontractor shall supply all equipment required to control, filter, and move effluent produced during release cleaning activities.

1) The filter system shall consist of a 20 micron pre-filter and 5 micron filter.

2) For cleaning equipment, material, debris and building structures; the subcontractor shall supply storage tanks and secondary containment with a minimum liquid effluent storage capacity to allow 15 calendar days storage, without impacting the subcontractor operations.

b. If stabilizer coatings are used, they shall be Carboline D3358 or approved equal. Vendors may include, but are not limited to, the following:

1) Tnemec Series 6 - Tnemec-Cryl
2) Sherwin-Williams
3) International Protective Coatings Corp

c. Non-strippable coating:

1) Polymeric Barrier System (PBS) by Bartlett Services, Inc.
2) An approved equal

C.7.2.2.3 Application

a. The subcontractor shall remove contamination on equipment, materials, or debris as follows. Methods that generate excessive secondary waste are prohibited.

1) Thorium-contaminated items must by surveyed by FERMCO for compliance with the limits contained in Table 2-2 of the DOE Radiological Control Manual before being released from thorium contamination areas. Items taken from these areas shall be either decontaminated, wrapped and brought directly to containers labeled as containing thorium-contaminated items (not for re-packaging), or containerized prior to removal from the thorium area.

2) The subcontractor shall remove or remove and fix contamination on all surfaces within the structure until the detected radioactive levels are below the criteria as stated in Section C.7.2.2.3 prior to removing the exterior siding from a structure and prior to dismantling a structure (where the exterior is not removed).

b. As outlined in Chapter 9 of the DOE Decommissioning Handbook, acceptable methods for removing contamination include, but are not limited to:

1) Hydro-blasting
2) HEPA vacuuming
3) Other acceptable methods include the use of a 1,000 psi propane or kerosene powered steam cleaner

c. As outlined in Chapter 9 of the DOE Decommissioning Handbook, acceptable methods for fixing contamination include, but are not limited to:

1) Stabilizer coating
2) Encapsulation

d. The subcontractor shall control effluent generated while removing and fixing contamination. These effluent may include, but are not limited to:

1) Hydro-blasting water or steam cleaning water
2) Dust and debris

e. If hydro-cleaning or steam cleaning water is used, the subcontractor shall:

1) Seal the floor cracks/seams and building cracks using non-strippable coating to protect the environment from hydro-blasting effluent.

2) Contain hydro-blasting effluent to the building interior.

3) Provide secondary containment outside the building.

f. The subcontractor shall collect all waste and effluent generated while removing and fixing contamination. Effluent and sludge shall be containerized in accordance with the requirements in Section C.7.2.2.2.

g. Once contamination has been removed, the subcontractor shall take precautions to prevent the spread of contamination to the facility structure or equipment.

h. The subcontractor shall take precautions to prevent the breaching of stabilizer coatings applied to the facility structure or equipment.

C.7.2.3 Interior Dismantlement

This section includes the subcontractor's responsibility for the removal of demolition debris within the facility and support items within or outside the facility. The subcontractor shall remove, cut, seal, segregate, pre-stage and containerize all demolition debris items, these items shall include, but not be limited to, the following:

a. Conduit
b. Wire
c. Electrical boxes (junction, switch)
d. Contractors
e. Lighting fixtures
f. Motor operated valves
g. Lighting station
h. Raceway and troughs
i. Cable trays
j. Piping
k. Assorted valves, fittings, elbows, gauges, spool pieces, etc.
l. Ductwork, plenums, branches, etc.
m. Miscellaneous similar items

C.7.2.3.1 Dismantlement Equipment

All lifting and hoisting equipment required shall be in compliance with Attachment J.3.3, FEMP Safety Requirements.

C.7.2.3.2 Application

a. The subcontractor shall remove the ductwork and piping and seal at both ends prior to movement to prevent spillage of any residual liquids or contamination. Sealing is not a requirement for conduit. These items and other interior debris shall be cut and segregated per the requirements of Figures C.7-1 and C.7-2 of this specification package. (Ductwork shall be collapsed to minimize waste volumes).

b. For those areas of the equipment that have interior cavities that are not accessible and cannot be visually inspected, the subcontractor shall open the equipment by unbolting or cutting by mechanical means to allow access for the visual inspection and/or release cleaning.

c. For personnel safety, remote mechanical removal equipment should be used to the maximum extent practical.

d. Uncontrolled dropping of materials is not allowed.

e. Flame cutting must be performed utilizing HEPA ventilation with approved spark arresters.

C.7.2.4 Equipment Dismantlement

This section includes the subcontractor's responsibility for removal or dismantlement of equipment within the facility and support systems within or outside the facility, segregation of equipment and components into various waste streams, and preparation for packaging.

C.7.2.4.1 Dismantlement Equipment

All lifting and hoisting equipment required shall be in compliance with this specification package.

C.7.2.4.2 Sealing Material

Sealing material shall be sufficiently durable to maintain its integrity during handling, containerization, and exposure to weather. The subcontractor shall seal openings after cleaning and after verification inspection by FERMCO.

C.7.2.4.3 Application

Equipment Dismantlement/Removal:

The subcontractor shall submit a listing of equipment which identifies general equipment type categories as identified below.

a. Type RA Equipment: Equipment which is small enough to be handled by one or two individuals.

1) This work consists of those pieces that one or two individuals can safely handle without lifting devices.

2) All equipment and piping shall be cut and segregated per the requirements of the MSCC (Figures C.7-1 and C.7-2).

3) After cutting, remaining openings on the equipment shall be sealed.

b. Type RB Equipment: Small equipment requiring a forklift, bobcat or crane to handle.

1) The subcontractor shall erect or use other necessary lifting equipment as required to remove type RB equipment.

2) All equipment and piping shall be cut and segregated per the requirements of the applicable MSCC.

3) After cutting, remaining openings on the equipment shall be sealed.

c. Type RC Equipment: Equipment which must be significantly disassembled.

1) The subcontractor shall remove the various process and related support equipment which lends itself to disassembly into manageable parts for material handling and disposition movements.

2) All equipment and piping shall be cut and segregated per the requirements of the MSCC. (Figures C.7-1and C.7-2, and Attachments J.4.3 and J.4.4).

3) After size reduction, remaining openings on the equipment shall be sealed.

4) In some cases this equipment is elevated from the ground by the means of a structural platform. In these cases the equipment will be cut away or disconnected from the platform and lowered to the ground. The dismantlement of this equipment shall be accomplished by shearing and cutting whenever possible. If this is not possible, the equipment shall be dismantled at convenient assembly joints.

d. Type RD Equipment: Equipment which must be removed in one piece during dismantlement of the building.

1) Prior to cleaning the building:

- All openings on the equipment shall be sealed weather tight.

- Where necessary, the equipment will have to be prepared as described in this specification package. An alternative would be to double wrap the equipment with 6-mil polyethylene, tape, and seal prior to opening the building.

2) If necessary, the equipment shall be rigged in accordance with segregated and packaged in accordance with this specification package.

C.7.2.5 <u>Structural Steel Dismantlement</u>

This section includes the dismantling and containerization of structural steel, miscellaneous steel, and metal siding/roofing:

a. Structural steel
b. Bar joists
c. Floor plate/decking
d. Grating
e. Stairs, ladders, and handrail
f. Metal siding and roofing, including doors, louvers, and windows
g. All other miscellaneous steel
h. Control of fugitive emissions

C.7.2.5.1 Preparation

a. The subcontractor shall ensure that adequate laydown space has been cleared and barriers have been established.

b. Steel and siding shall have contamination removed or removed and fixed prior to exposing steel and siding to the environment in accordance with Section C.7.2.2.

c. The subcontractor shall minimize to the largest extend possible direct hands on labor. This may be done by the use of equipment such as wheel or track mounted shears, forklifts and other material handling equipment. This may also be done by utilizing tripping techniques on primary steel whenever possible.

d. After release cleaning, inspection, wipe-down, and/or encapsulation have been performed and acceptable FERMCO survey results have been obtained, the building shell may be removed.

e. Siding/roofing, gutters and down-spouts, windows, window frames, overhead doors, personnel doors and other associated exterior shell material, demolition debris and equipment shall be removed prior to structural demolition.

C.7.2.5.2 Application

a. All dismantlement activities shall be performed in accordance with the standards listed in Section C.7.1.2.

b. Control of fugitive emissions shall be maintained at all times during this removal work to minimize visible dust.

c. All lifting and rigging required shall be in accordance with Attachment J.3.3, FEMP Safety Requirements of this subcontract package.

d. All projections shall be removed flush with the floor slab or existing grade.

e. The following items are also included (where applicable) in the sequence of structural steel dismantlement:

1) Doors, Windows, and Frames:

a) The subcontractor shall remove all windows in one piece and place them in appropriate containers.

b) The subcontractor shall remove all doors (wood and/or steel) and place them in appropriate containers.

2) Gutters, and Wall and Roof Louvers:

The subcontractor shall ensure that louvers, gutters, and roof vents are removed during structural steel dismantlement and placed in appropriate containers.

C.7.2.6 Concrete Removal

This section includes dismantling of all above- and below-grade concrete, including:

a. Cast-in-place walls
b. Precast concrete components
c. Foundations, piers, and curbs
d. Concrete encasement (e.g., fireproofing)
e. All above-grade concrete
f. Control of fugitive emissions

C.7.2.6.1 Preparation

The subcontractor shall ensure that adequate laydown space has been cleared and barriers have been established.

C.7.2.6.2 Application

a. All dismantlement activities shall be performed in accordance with the references listed in Section C.7.1.2.

b. Controls shall be maintained at all times during this removal work to minimize fugitive emissions.

c. The subcontractor shall prevent damages to adjacent structures, materials, and equipment including underground utilities, during dismantlement activities.

d. All lifting and rigging required shall be in accordance with Attachment J.3.3, FEMP Safety Requirements of this subcontract package.

e. Removal of Above-Grade Concrete Projections:

1) Remove concrete piers, building curb, walls, and miscellaneous equipment foundations and projections above existing grade slab.

2) Remove equipment, column, and other miscellaneous foundation piers and walls flush with existing grade.

f. Cutting

1) All material shall be cut as required for containerization in accordance with Section C.7.2.1 of this specification package.

2) Embedded steel reinforcing is considered part of concrete.

g. Concrete wall removal shall occur only after associated equipment, tanks or other appurtenances have been removed and safely contained.

h. Interior concrete/CMU walls shall be removed prior to opening the shell of the structure. A water spray shall be used to minimize fugitive emissions.

i. Interior concrete slabs can be removed using methods similar to the interior wall removal.

C.7.2.7 Quality Assurance

C.7.2.7.1 The subcontractor shall weigh filled containers on certified scale and provide weight verification to FERMCO.

C.7.2.7.2 The subcontractor shall inspect filled containers upon their return to the staging area to verify that no damage has occurred during the filling of the container. Repair or replace damaged containers as directed by FERMCO.

C.7.2.7.3 Prior to commencement of work, the subcontractor shall demonstrate the methods for removing and fixing contamination on a sample area of the structure or equipment selected by FERMCO.

MSCC FORM - WASTE PIT FACILITY D&D

TASK	WASTE STREAM	TYPE	PREFERRED CONTAINERS							
			LARGE METAL BOX (Top Loader)	SMALL METAL BOX		ISO	DRUM	ROLL-OFF BOX	DUMPSTER	NO CONTAINER
				B-12	B-25					
Demolition Debris Removal	Light Fixtures		X							
	Plumbing Fixtures		X							
	Cable Trays		X							
	Valve Fittings		X							
	Eye & Safety Showers		X							
	Non-Process Piping		X							
	PVC Piping		X							
	Junction Boxes		X							
	Conduit & Wire		X							
	Instrumentation		X							
	Electrical Panels		X							
	Fluorescent Bulbs				X'					
	Ballasts		X							
	Bulbs-incandescent		X							
	Motors		X							
	Feeder Cable		X							
Equipment Removal	Conveyors		X							
	Process Pumps		X							
	Tanks		X							
	Fans		X							
	Scales		X							
	Exhaust Fans		X							
Equipment removal (con't)	Filters	Metal	X							
		Gas	X							
	Carbon traps		X							

This list of waste streams is not inclusive and pertains to material for disposal at the Nevada Test Site only.

NOTE: All material must be size reduced to minimize void space in each container. All materials and containers must be free from liquids. Each container must have a Process Area Waste Checklist completed prior to final disposal - MEF #2701

FOOTNOTE: 1. Additional shoring of containers required to maintain integrity of box during loading and shipping.

FIGURE C.7-1

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FIGURE C.7-1

MSCC FORM - WASTE PIT FACILITY D&D (Continued)

TASK	WASTE STREAM	TYPE	PREFERRED CONTAINERS							
			LARGE METAL BOX (Top Loader)	SMALL METAL BOX		ISO	DRUM	ROLL-OFF BOX	DUMPSTER	NO CONTAINER
				B-12	B-25					
	Controllers		X							
	Roll-up -doors		X							
	Heaters		X							
	Control centers		X							
	Platforms		X							
	Filter Units		X							
	Misc. Tanks		X							
	Misc. Non-process equipment		X							
Clean Building	Washwater									Holding Tank
	Floor debris (general)						X			
Structural Steel	Mainframe members[1]		X							
	Stairs & Ladders		X							
	Handrail		X							
	Metal roof panels		X							
	Grating		X							
Concrete removal	Concrete				X					

This list of waste streams is not inclusive and pertains to material for disposal at the Nevada Test Site only.

NOTE: All material must be size reduced to minimize void space in each container. All materials and containers must be free from liquids. Each container must have a Process Area Waste Checklist completed prior to final disposal - MEF #2701

NOTE: 1. Additional shoring of containers required to maintain integrity of box during load and shipping.

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MSCC FORM - WASTE PIT FACILITY D&D

TASK	WASTE STREAM	TYPE	PREFERRED CONTAINERS: LARGE METAL BOX (Top Loader)	SMALL METAL BOX: B-12	SMALL METAL BOX: B-25	ISO	DRUM	ROLL-OFF BOX	DUMPSTER	NO CONTAINERS[3]	SIZE CRITERIA
Demolition Debris Removal											
	Light Fixtures							B			(1)
	Plumbing Fixtures							I			(1)
	Cable Trays							B			(2)
	Valve, Fittings							B			(2)(5)
	Eye & Safety Showers							I			(1)
	Non-Process Piping							B			(2)(5)
	PVC Piping							I			(2)
	Junction Boxes							B			(1)
	Conduit and wire							B			(2)
	Instrumentation							B			(1)
	Panels	Elect.						B			(1)
	Fluorescent Bulbs				J						-
	Ballasts	Elect.					J				-
	Bulbs-Incandescent							I			-
	Motors	Elect.						B			(1)
	Feeder cable							G			(2)
Equipment removal	Conveyors							B			(1)
	Process Pumps							B			(1)
	Tanks							B			(1)
	Fans							B			(1)

CATEGORIES:
A - Accessible Metals
B - Inaccessible Metals (non-process)
C - Process-Related Metals
D - Light Gauge Metal
E - Concrete
F - Acid Brick
G - Non-Regulated ACM
H - Regulated ACM
I - Miscellaneous Materials[2]
J - Product, Residues, and Special Materials[4]

FOOTNOTES:
1. Miscellaneous Materials can be containerized with Non-Regulated ACM materials.
2. Unpackaged materials have to meet release criteria for removable radioactive contamination.
3. Ductwork that passes visual inspection shall be flattened
4. Waste Streams designated as Category J must be containerized by specific waste stream (i.e., segregated).

SIZE CRITERIA:
(1) maximum size 10' long x 4' wide x 1' high (including projections)
(2) maximum size 10' long with 1' projection (max. height = 1.5' including projections)
(3) maximum size 6' long x 4' wide x 1.5' high
(4) transite bundles 8' long x 4' wide x 1.5' high
(5) piping w/ > 12" dia. must be split in half lengthwise
(6) leave intact
(TBD) To Be Determined

FIGURE C.7-2

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MSCC FORM - WASTE PIT FACILITY D&D (Continued)

TASK	WASTE STREAM	TYPE	PREFERRED CONTAINERS								
			LARGE METAL BOX (Top Loader)	SMALL METAL BOX		ISO	DRUM	ROLL-OFF BOX	DUMPSTER	NO CONTAINERS[3]	SIZE CRITERIA
				B-12	B-25						
	Scales							B			(1)
	Exhaust Fans							B			(1)
	Filters	Metal						B			(1)
		Gas						B			(1)
	Carbon traps							B			(1)
	Controllers							B			(1)
	Roll-up Doors							B			(1)
	Heaters							B			(1)
	Control Centers							B			(1)
	Platforms							B			(1)
	Filter Units							B			(1)
	Misc. Tanks							B			(1)
	Misc. Non-Process Equipment							B			(1)
Clean Building	Washwater									Holding Tank	-
	Floor Debris (General)						J				-
Structural Steel	Mainframe Members									A	(2)
	Stairs & Ladders							B			(1)
	Handrail							B			(2)
	Metal Roof Panels									D	(4)
	Grating							B			(1)
Concrete Removal	Concrete							E			(3)

CATEGORIES:

A - Accessible Metals
B - Inaccessible Metals (non-process)
C - Process-Related Metals
D - Light Gauge Metal
E - Concrete
F - Acid Brick
G - Non-Regulated ACM
H - Regulated ACM
I - Miscellaneous Materials[2]
J - Product, Residues, and Special Materials[4]

FOOTNOTES:

1. Miscellaneous Materials can be containerized with Non-Regulated ACM materials.
2. Unpackaged materials have to meet release criteria for removable radioactive contamination.
3. Ductwork that passes visual inspection shall be flattened
4. Waste Streams designated as Category J must be containerized by specific waste stream (i.e., segregated).

SIZE CRITERIA:

(1) maximum size 10' long x 4' wide x 1' high (including projections)
(2) maximum size 10' long with 1' projection (max. height = 1.5' including projections)
(3) maximum size 6' long x 4' wide x 1.5' high
(4) transite bundles 8' long x 4' wide x 1.5' high
(5) piping w/ > 12" dia. must be split in half lengthwise
(6) leave intact
(TBD) To Be Determined

FIGURE C.7-2

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SECTION C.8

SITE RESTORATION PHASE TECHNICAL REQUIREMENTS

C.8.1 SECTION INCLUDES

a. Site Restoration

b. Surveying

c. Earthwork

d. Erosion Control

e. Dust Suppression

C.8.2 TECHNICAL REQUIREMENTS

C.8.2.1 Site Restoration

Site restoration activities will be limited to the waste pit area only as shown on Figure C.8-1. These activities shall be initiated only when the contaminated areas have been tested for Final Remediation Levels (FRLs) and certified clean (as discussed in Section C.6.2.2). Figures C.5-1 and C.5-2, Waste Pit Excavation Limits and Sections, show the elevations of the waste pits down to the top and bottom of liner. The depth of excavation below and adjacent to the liner will depend on contamination levels. The subcontractor shall use the contours shown on Figure C.8-1 as a conceptual guide for the final waste pit restoration activities.

Based on neat line excavation boundaries, as shown on Figures C.5-1 and C.5-2 and as discussed in Section C.6.2.2, approximately 150,000 cubic yards of clean berm material will be available for use in site restoration. Based on excavation depths required to meet the FRLs, the estimated quantities of clean berm material may vary. Therefore, it is the subcontractor's responsibility to survey the entire waste pit area and establish a quantity of clean usable berm material prior to the start of restoration. FERMCO reserves the right to adjust the contours during final site restoration to achieve a cut fill balance and to match the final total site contours. The subcontractor shall use the waste pit boundaries and conceptual contours along with the quantity of clean berm material to compute the cost of final grading. The subcontractor shall include in his cost estimate, interim seeding of the entire area outlined in Figure C.8-1 using standard seed mixtures to avoid erosion.

Should additional material be required to meet the final required elevations, FERMCO and the subcontractor will negotiate an adjustment to the subcontract at that time. If FERMCO and the subcontractor cannot reach and agreement for the subcontract adjustment, FERMCO reserves the right to delete this phase of work from the subcontract. Earth moving equipment used, must be decontaminated if used during excavations, or equipment shall be brought in from off-site.

The waste pit area shall be protected from contaminated areas when the restoration activities take place. The waste process area may still be contaminated and it shall not drain into the waste pits, thus contaminating clean material. The subcontractor's water collection system (e.g., pumping equipment) shall be left in place when the subcontractor demobilizes from the site. The system will then be owned and operated by FERMCO after the subcontractor demobilizes from the site.

The requirements below shall be used in completing the site restoration activities.

C.8.2.2 Surveying

The subcontractor shall perform all field run topographic and location surveys within the waste pit boundary as necessary to complete the site restoration. All coordinates shall be referenced to the NAD 83 State Planar Coordinate System. All survey work shall be to third order accuracy standard as established by the Standards and Specifications for Geodetic Control Networks.

C.8.2.3 Earthwork

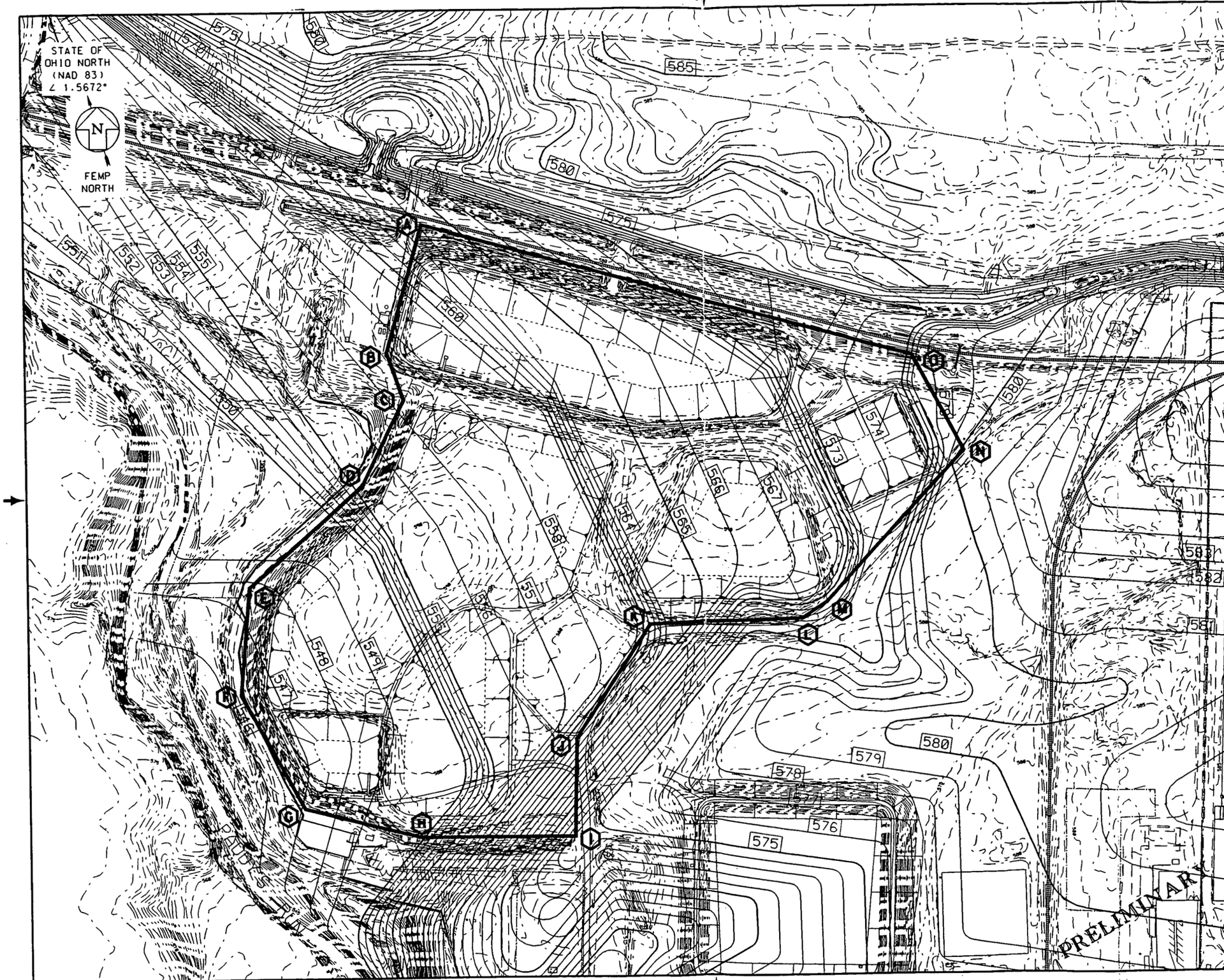
The subcontractor shall be responsible for all earthwork related to restoration of the waste pit area. Earthwork includes, but is not limited to, all grading, excavation, compaction, and filling, and shall be specified to Ohio Department of Transportation (ODOT) standards.

C.8.2.4 Erosion Control

Permanent or temporary measures shall be implemented by the subcontractor to prevent erosion (both wind and water) and control sediment during site restoration. Consideration must be given to avoid sediment loadings on Paddy's Run due to restoration activities. All erosion and sediment control measures will require maintenance during construction. ODOT standards for control measures will be specified. "Rainwater and Land Development, Ohio's Standards for Stormwater Management and Stream Protection, 1995" and the FERMCO Stormwater Pollution Prevention Plan will be used as a guideline in establishing control measures for site restoration activities.

C.8.2.5 Dust Suppression

All earthwork shall be free from visible dust in accordance with the OAC 3745-17-08, Control of Fugitive Dust. Industry-accepted methods of dust control suitable for the waste pit area, such as sprinkling, chemical treatment, light bituminous treatment or similar methods, will be permitted.



SITE RESTORATION COORDINATES		
STATE PLANAR (NAD83)		
	EASTING	NORTHING
A	1346758.29	482405.43
B	1346684.10	482140.94
C	1346717.51	482042.54
D	1346630.35	481866.02
E	1346390.53	481657.41
F	1346369.85	481434.11
G	1346502.03	481197.09
H	1346745.14	481135.22
I	1347067.68	481135.03
J	1347073.29	481337.83
K	1347226.54	481572.73
L	1347543.67	481581.43
M	1347595.46	481615.46
N	1347880.70	481926.73
O	1347776.00	482126.21

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0' 200'

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

FERMC

Fernald Environmental Management Project

U.S. DEPARTMENT OF ENERGY

WASTE PIT REMEDIAL ACTION PROJECT

WASTE PIT RESTORATION PLAN

SCALE: 1" = 200'-0"

RES #2964
DATE 5/21/96
DRAWN S.J.SMOCK

FIGURE C.8-1

FILE NAME: /USRI/RES/RES2964/C8-1.DGN

SECTION J

ATTACHMENTS

INTRODUCTION

This section is comprised of various attachments which support the implementation of remedial actions for the Waste Pits Remedial Action Project. Some attachments are included because they provide information necessary to support a basic understanding of the Fernald Environmental Management Project (FEMP), Operable Unit 1, labor agreements, etc. Other attachments are included in this section to provide criteria to be specifically factored into facilities/activities developed by the subcontractor to remediate Operable Unit 1, such as the ARARs tables. Finally, this section includes attachments needed by the subcontractor during the implementation of the project, such as forms and instructions for the submittal of information as called out by this subcontract.

ORGANIZATION OF THE ATTACHMENTS SECTION

The attachments in this section are arranged as follows:

Attachment J.1 — Acronyms/Glossary - This attachment provides a listing of the acronyms used throughout this subcontract as well as a glossary defining terms used within this subcontract.

Attachment J.2 — Project Background - This attachment provides some brief information on the FEMP, and more specific information on the history of Operable Unit 1, including information on the origin, contents, and characteristics of the waste pits, as well as a discussion of activities which have taken place to date within the waste pit area in support of the remediation of Operable Unit 1.

Attachment J.3 — Safety and Quality Assurance Documentation - Provides a description of the FEMP safety and QA documentation procedures which will apply to the WPRAP and the subcontractor.

Attachment J.3.1 — Safety at the FEMP - Provides an overview of Safety at the FEMP and discusses the inter-relationship of the ALARA principle, Design Reviews, the establishment of Performance Grades, Safety Basis Documentation, the FEMP Safety Requirements, WPRAP Radiological Requirements and the WPRAP Quality Assurance Requirements.

Attachment J.3.2 — Safety Basis Documentation - Provides a description of the process by which the subcontractor can make a predetermination of the hazard category of its facility and operating approach.

Attachment J.3.3 — FEMP Safety Requirements - Provides a description of the General Safety Regulations which the subcontractor must follow, a description of the requirements for the subcontractor's Safety and Health Program and the Safety Training program.

Attachment J.3.4	WPRAP Radiological Safety Requirements - Provides a detailed description of the radiological safety requirements the subcontractor must meet.
Attachment J.3.5	WPRAP Quality Assurance Requirements - Provides a description of the requirements for the subcontractor's quality assurance program and documentation.
Attachment J.4.0	Other Attachments - Provides other attachments needed by the subcontractor in preparation of its proposal.

ATTACHMENT J.1

LIST OF ACRONYMS AND ABBREVIATIONS

ABMA	American Bearing Manufacturers Association
ACA	Amended Consent Agreement
ACGIH	American Conference of Government Industrial Hygienists
ACI	American Concrete Institute
AEDO	Assistant Emergency Duty Officer
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
AISI	American Iron & Steel Institute
ALARA	As Low As Reasonably Achievable
ANSI	American National Standards Institute
API	American Petroleum Institute
ARARs	Applicable or Relevant and Appropriate Requirements
ARASA	Alternative Remedial Action Subcontracting Approach
ARDWP	Addendum to Remedial Design Work Plan
ARF	Aiborne Release Fraction
ASME	American Society of Mechanical Engineers
ASNT	American Society for Non-destructive Testing
ASTM	American Society for Testing & Materials
AWS	American Welding Society
AWWA	American Water Works Association
AWWT	Advanced Wastewater Treatment
BAFO	Best And Final Offer
BAT	Best Available Technology
BSL	Biodenitrification Surge Lagoon
CBA	Collective Bargaining Agreement
CBT	Computer Based Training
CEMA	Conveyor Equipment Manufacturers Association
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act, as amended.

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

CFC	Certified For Construction	1
CFR	Code of Federal Regulations	2
CIS	Characterization Investigation Study	3
COC	Constituents Of Concern	4
CONOPS	Conduct of Operations	5
CPT	Cone Penetrometer Test	6
CRSI	Concrete Reinforcing Steel Institute	7
CRSP	Cooperative Remedy Screening Program	8
CSI	Construction Specification Institute	9
CY	Cubic Yard	10
D&D	Decontamination and Dismantlement	11
DAC	Derived Air Concentration	12
DBA	Design Basis Accident	
DCD	Design Criteria Document	14
DEEP	Dewatering, Excavation, Evaluation Program	15
DF&O	Director's Findings & Orders	16
DOE	U.S. Department Of Energy	17
DOE-FN	U.S. Department Of Energy - Fernald Area Office	18
DOE-HQ	U.S. Department Of Energy - Headquarters	19
DOE-OFO	U.S. Department Of Energy - Ohio Field Office	20
DOE-NV	U.S. Department Of Energy - Nevada	21
DOT	U.S. Department of Transportation	22
EBA	Evaluation Basis Accident	23
EDO	Emergency Duty Officer	24
EDPM	Ethylene Propylene Diene Monomer	25
E-O	Electro-Osmosis	26
EJMA	Expansion Joint Manufacturer's Association	27
EMR	Experience Modification Rate	28
ERDA	Energy Research and Development Association	

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

ERT	Emergency Response Team	1
FAT&LC	Fernald Atomic Trades & Labor Council	2
FEMP	Fernald Environmental Management Project	3
FERMCO	Fernald Environmental Restoration Management Corporation	4
FMPC	Feed Materials Production Center	5
FRESH	Fernald Residents for Environmental, Safety, and Health	6
FRL	Final Remediation Level	7
FS	Feasibility Study	8
GAO	General Accounting Office	9
GCBCTC	Greater Cincinnati Building and Construction Trades Council	10
GET	General Employee Training	11
GFCI	Ground Fault Circuit Interrupters	12
HASP	Health And Safety Plan	13
HAZOP	Hazard and Operability Analysis	14
HEPA	High-Efficiency Particulate Air (Filter)	15
HR	FERMCO Human Resources	16
HVAC	Heating, Ventilating and Air Conditioning	17
HWMU	Hazardous Waste Management Unit	18
IEEE	Institute of Electric & Electronics Engineers	19
ISA	International Society for Measurement and Control	20
LLRW	Low Level Radioactive Wastes	21
LSA	Low Specific Activity	22
MEF	Material Evaluation Form	23
MEI	Maximally Exposed Individual	24
MRE	Material Release Evaluator	25
MSCC	Material Segregation & Containerization Criteria	26
MSDS	Material Safety Data Sheet	27
MSL	Mean Sea Level	28
MSS	Manufacturer's Standardization Society	29

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

NCP	National Oil and hazardous substances pollution Contingency Plan	1
NEMA	National Electrical Manufacturer's Association	2
NEPA	National Environmental Policy Act	3
NESHAP	National Emission Standards for Hazardous Air Pollutants	4
NFC	National Fuel Code	5
NFPA	National Fire Protection Association	6
NIOSH	National Institute for Occupational Safety and Health	7
NIST	National Institute of Standards and Technology	8
NPDES	National Pollutant Discharge Elimination System	9
NTP	Notice To Proceed	10
NTS	U.S. Department Of Energy - Nevada Test Site	11
OAC	Ohio Administrative Code	12
OBBC	Ohio Basic Building Code	
ODNR	Ohio Department of Natural Resources	14
ODOT	Ohio Department Of Transportation	15
Ohio EPA	Ohio Environmental Protection Agency	16
ORR	Operational Readiness Review	17
OSHA	Occupational Safety and Health Administration	18
OU1	Operable Unit 1	19
P&ID	Process & Instrumentation Diagrams	20
PA	Pre-operational Assessment	21
PAAA	Price Anderson Amendments Act	22
PAH	Polynuclear Aromatic Hydrocarbon	23
PAPR	Power Air Purifying Respirator	24
PCB	Polychlorinated Biphenyl(s)	25
PCDF	Permitted Commercial Disposal Facility	26
PCM	Personnel Contamination Monitor	27
PEIC	Public Environmental Information Center	28
PEL	Permissible Exposure Limit	

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

PF	Protection Factor	1
PG	Performance Grade	2
PHA	Preliminary Hazard Assessment	3
PLA	Project Labor Agreement	4
PLC	Programmable Logic Controller	5
PPC	Personal Protective Clothing	6
PPE	Personal Protective Equipment	7
QA	Quality Assurance	8
QAP	Quality Assurance Plan	9
QC	Quality Control	10
RA	Remedial Action	11
RAWP	Remedial Action Work Plan	12
RCRA	Resource Conservation and Recovery Act, as amended	13
RCT	Radiological Control Technician	14
RD	Remedial Design	15
RDR	Radiological Deficiency Report	16
RDWP	Remedial Design Work Plan	17
REM	Radiological Environmental Monitoring	18
RFP	Request for Proposal	19
RI	Remedial Investigation	20
RIMIA	Receiving and Incoming Materials Inspection Area	21
ROD	Record of Decision	22
RWI	Radiological Worker I training	23
RWII	Radiological Worker II training	24
RWP	Radiological Work Permit	25
S&H	Safety & Health	26
SA	Safety Assessment	27
SAP	Sampling and Analysis Plan	28
SAR	Safety Analysis Report	29

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

SCQ	Sitewide CERCLA Quality Assurance Project Plan	1
SCS	Soil Conservation Service	2
SIC	Standard Industrial hazard Classification	3
SMACNA	Sheet Metal and Air Conditioning Contractors National Association	4
SOP	Standard Operating Procedure	5
SOT	Systems Operability Testing	6
SOW	Statement Of Work	7
SPT	Standard Penetration Test	8
SSR	Standard Startup Review	9
SWMU	Solid Waste Management Unit	10
TBC	To Be Considered	11
TBD	To Be Determined	12
TCA	Trichloroethane	
TCLP	Toxicity Characteristic Leaching Procedure	14
TEDE	Total Effective Dose Equivalent	15
TEMA	Tubular Exchanger Manufacturer's Association	16
TLD	ThermoLuminescent Dosimeter	17
TLV	Threshold Limit Value	18
TRB	Technical Review Board	19
UAP	Uranyl Ammonium Phosphate	20
UBC	Uniform Building Code	21
UL	Underwriters Laboratories, Inc.	22
USCS	Unified Soil Classification System	23
USEPA	U.S. Environmental Protection Agency	24
WAC	Waste Acceptance Criteria	25
WPRAP	Waste Pits Remedial Action Project	26

GLOSSARY

absorbed dose	The energy absorbed by matter from ionizing radiation per unit mass of irradiated material at the place of interest in that material. The absorbed dose is expressed in units of rad (or gray) (1 rad = 0.01 gray).
acid brick	A heat treated material that is non-porous and resistant to chemical attack. Acid brick was used, for example, in areas of buildings within the Production Area where a corrosive environment existed, as a protective layer for the underlying concrete.
Advanced Wastewater Treatment Facility	An 1100-gpm ion exchange wastewater treatment plant that began operating in January 1995.
airborne radioactivity area	Any area where the measured concentration of airborne radioactivity, above natural background, exceeds or is likely to exceed 10 percent of the derived air concentration (DAC).
ALARA (as low as reasonably achievable)	A DOE policy to reduce exposures and the risk associated with residual contamination levels that are "as low as reasonably achievable" considering technical, economic, social, practical and public policy factors, as appropriate.
annual limit on intake	The derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a year by the reference manual (ICRP Publication 23) that would result in a committed effective dose equivalent of 5 rem (0.05 sievert) or a committed dose equivalent of 50 rem (0.5 sievert) to any individual organ or tissue.
applicable or relevant and appropriate requirements (ARARs)	Any state or federal environmental law that pertains to protection of human life and the environment in addressing specific conditions or use of a particular cleanup technology at a National Priorities List (NPL) site.
Authorization to Operate	Authorization to operate will be issued after the completion of the Standard Start-up Review and the Remedial Action Work Plan Deliverables.
bioassay	The determination of kinds, quantities, or concentrations, and, in some cases, locations of radioactive material in the human body, whether by direct measurement or by analysis, and evaluation of radioactive materials excreted or removed from the human body.

GLOSSARY (Continued)

breathing zone air sampling	Actions conducted to detect and quantify the radiological conditions of air from the general volume of air breathed by the worker, usually at a height of 1 to 2 meters. This is a form of job/project specific air monitoring. See the definitions for "Personal Air Sampling (PAS)" and "High Volume Grab Sampling."
Category I (controlled area)	In addition to the definition above, considered to have a potential for individuals to be exposed to low levels of radioactive contamination when working in the area. Eating, drinking, smoking, and/or chewing is prohibited within a Category I controlled area except for controlled break areas approved by the Manager of Radiological Control. Personnel and material monitoring is required to exit a Category I controlled area. Not to be confused with Hazard Category I.
Category II (controlled area)	An area that has been surveyed and released from contamination controls. No personnel or material monitoring is required on exit. Not to be confused with Hazard Category II.
collective dose	The sum of the total effective dose equivalent values for all individuals in a specified population. Collective dose is expressed in units of person-rem (or person-sievert).
committed dose equivalent	The dose equivalent calculated to be received by a tissue or organ over a 50-year period after the intake of a radionuclide into the body. It does not include contributions from radiation sources external to the body. Committed dose equivalent is expressed in units of rem (or sievert).
committed effective dose equivalent	The sum of the committed dose equivalents to various tissues in the body ($H_{T,50}$), each multiplied by the appropriate weighting factor (w_T)--that is, $H_{E,50} = \Sigma w_T H_{T,50}$. Committed effective dose equivalent is expressed in units of rem (or sievert).
conduct of operations	Requirements and guidelines used in developing directives, plans, and/or procedures relating to operations at DOE facilities as defined in DOE Order 5480.19.
contamination	Any area where removable contamination levels are greater than the removable values specified, but less than or equal to 100 times those levels.
Contracting Officers Technical Representative (COTR)	The individual from FERMCO providing the technical direction for work performed under a subcontract.

GLOSSARY (Continued)

controlled area	Any area to which access is managed in order to protect individuals from exposure to radiation and/or radioactive material. Individuals who enter only the controlled area without entering radiological areas are not expected to receive a total effective dose equivalent of more than 100 mrem (0.001 sievert) in a year from sources other than radon or thoron and their progeny. Individuals who enter only the controlled area without entering radiological areas are not expected to receive a committed effective dose equivalent of more than 500 mrem (0.005 sievert) in a year from exposure to radon or thoron and their progeny.
controlled area water station	A routinely surveyed location provided for the distribution of water to workers in a controlled area other than in radiological areas.
deep dose equivalent	The dose equivalent derived from external radiation at a depth of 1 cm in tissue.
derived air concentration	For the radionuclides listed in Appendix A of 10 CFR 835, the airborne concentration that equals the ALI divided by the volume of air breathed by an average worker for a working year of 2000 hours (assuming a breathing volume of 2400 m^3).
dose equivalent	The product of absorbed dose (D) in rad (or gray) in tissue, a quality factor (Q), and other modifying factors (N). Dose equivalent is expressed in units of rem (or sievert) (1 rem = 0.01 sievert).
EPDM liner	A 60-mil thick Royal Seal ethylene propylene diene monomer elastomeric membrane which was used as the liner for Waste Pits 5 and 6.
external dose or exposure	That portion of the dose equivalent received from radiation sources (e.g., "external sources") outside the body.
facility	All parts of project provided by contractor.
feasibility study	Provides a full evaluation of cleanup alternatives based on information gathered during the remedial investigation.
final remediation levels	Contaminant-specific, concentration-based cleanup levels for environmental media, identified in the Record of Decision.

GLOSSARY (Continued)

fixed contamination area	Any area with removable contamination levels below the values specified, and fixed contamination levels that exceed the total contamination values in said table.
general sump	The general sump consisted of a series of batch tanks that received an average of 1.6 million gallons per month of filtrates from the various processing plants, wastewater from the laboratory (0.3 to 0.9 million gallons per month), and general decontamination and cleanup water.
Great Miami Aquifer	A regionally extensive groundwater aquifer system providing potable drinking water to many communities throughout central and southwestern Ohio. The FEMP is located over a 1050-acre portion of the almost 960,000-acre aquifer system. The Great Miami Aquifer is designated a sole-source aquifer under the Safe Drinking Water Act (SDWA), signifying a protected status as a valued natural resource.
hazard category	(From DOE-EM-STD-5502-94 Hazard Baseline Documentation) The consequences of unmitigated releases of radioactive and/or hazardous material are evaluated as required by DOE 5480.23 and classified by the following hazard categories: a. **Category 1**- The hazard analysis shows the potential for significant offsite consequences. b. **Category 2**- The hazard analysis show the potential for significant onsite consequences. c. **Category 3**- The hazard analysis show the potential for only significant localized consequences (DOE 5480.23).
hazard classification	Non-nuclear facilities are categorized as high, moderate, or low hazards based on the following: a. **High**- Hazards with a potential for onsite and offsite impacts to large numbers of persons or for major impacts to the environment. b. **Moderate**- Hazards which present considerable potential impacts to people or the environment, but at most only minor offsite impacts. c. **Low**- Hazards which present minor onsite and negligible offsite impacts to people and the environment.

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GLOSSARY (Continued)

hazardous waste	(1) A waste material exhibiting the characteristics of ignitability, corrosivity, reactivity, or toxicity or which is listed in 40 CFR Part 261, "Protection of Environment/Solid Waste/Resource Conservation and Recovery Act (RCRA)" or identified in applicable state regulations. (2) Any waste material that is designated as hazardous by the Administrator of the Environmental Protection Agency (EPA) in 40 CFR Part 261 and that is subject to the Hazardous Waste Manifest requirements of 40 CFR Part 262. (3) A discarded material which is listed in the Environmental Protection Agency Hazardous Waste List which exhibits characteristics of ignitability, corrosivity, or reactivity. Both "listed" and "characteristic" wastes are regulated under RCRA as hazardous wastes.
Hazardous Waste Management Unit (HWMU)	A contiguous area of land on or in which hazardous waste is placed, or the largest area in which there is significant likelihood of mixing hazardous waste constituents in the same area.
high contamination area	Any area where removable contamination levels are greater than 100 times the removable values specified.
high volume grab sampling	Performed by removing a sample of workplace air over a short time interval, typically less than one hour, with a sampling pump which has the capability of pulling a flow-rate of at least 10 cubic feet per minute (CFM). This is a form of job/project specific BZ air monitoring. See definition for "Personal Air Sampling."
internal dose or exposure	That portion of the dose equivalent received from radioactive material taken into the body (e.g., "internal sources").
material release evaluator	An individual authorized to evaluate and approve the unrestricted release of materials when special considerations, as defined in FERMCO procedures, are encountered. Unless otherwise approved by the Radiological Control Manager, the RCT Supervisors, Radiological Engineering and Radiological Compliance Health Physicists are the only personnel authorized to evaluate such items for unrestricted release.
maximally exposed individual	A theoretical individual defined to allow dose/dosage comparison with numerical Evaluation Guidelines (Egs). EGs are dose or dosage values established for the purpose of evaluating the adequacy of the results associated with Design Basis Accidents and Evaluation Basis Accidents.

GLOSSARY (Continued)

National Environmental Policy Act of 1969 (NEPA)	Signed into law in 1970, it declares a national environmental policy and promotes consideration of environmental concerns by federal agencies.
National Oil and Hazardous Substances Pollution Contingency Plan (NCP)	Provide the organizational structure and procedures for preparing for, and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants.
National Priorities List (NPL)	EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under Superfund. The list is used primarily on the score a site receives from the Hazard Ranking System. EPA is required to update the NPL at least once a year. A site must be on the NPL to receive money from the Trust Fund for remedial action.
Nevada Test Site (NTS)	A DOE-owned facility that currently accepts low-level radioactive material from DOE facilities. This sparsely populated area is located 55 miles north of Las Vegas, Nevada in a dry climate.
occupational exposure	An individual's exposure to ionizing radiation (external and internal) as a result of that individual's work assignment. Occupational exposure does not include planned special exposures, exposure received as a medical patient, background radiation, or voluntary participation in medical research programs.
On-Site Disposal Facility	A key element of the Records of Decision for Operable Unit 2 and Operable Unit 5, as well as a part of the proposed remedy for Operable Unit 3, this is a disposal facility being designed and constructed by Operable Unit 2, with placement operations beginning in March 1988. Certain Operable Unit 1 materials may also be placed in the OSDF, in accordance with the OU1 Record of Decision, consistent with the OU3 and OU5 RODs, to the extent that these materials are amenable for such placement.
operable unit	A discrete action that comprises an incremental step toward comprehensively addressing site problems. This discrete portion of a remedial response manages migration, or eliminates or mitigates a release, threat of a release, or pathway of exposure. The cleanup of a site can be divided into a number of operable units, depending on the complexity of the problems associated with the site. Operable units may address geographical portions of a site, specific site problems, or initial phases of an action, or may consist of any set of actions performed over time or any action that are concurrent but located in different parts of a site.

GLOSSARY (Continued)

perched water	Groundwater residing within the clay-rich soil located above the underlying Great Miami Aquifer.
personal air sampling	The sampling of air for radioactive particles in the immediate vicinity of an individual radiation worker's nose and mouth, usually by a portable sampling pump and lapel sampler worn on the body. This should be the primary method of job/project specific air monitoring to assess occupational exposures.
Preliminary Hazard Assessment	An analytical tool usually used early in the life of a project or activity to identify, collect, and integrate information concerning: a. Hazard (materials in quantity, form, and location) b. Energy sources and potential initiating events c. Preventive features d. Mitigative features
process knowledge	Information available about a process from documentation of past operations or information from individuals who participated in the operation. This information includes, but is not limited to, process chemistry, history of accidents/spills, maintenance chemicals/materials, and other uses of the process vessels or work space.
production area	A 55-hectare (136-acre) fenced in area located near the center of the FEMP property, where production operations occurred.
pyrophoric	The quality of being liable to cause fires through friction. Pyrophoric material has retained heat from manufacturing or processing, or can be ignited readily and when ignited burns so vigorously and persistently as to create a serious transportation, handling, and disposal hazard.
quality factor	The principal modifying factor used to calculate the dose equivalent from the absorbed dose; the absorbed dose (expressed in rad or gray) is multiplied by the appropriate quality factor.
Radiological Incident	
radiation area	Any area accessible to individuals in which radiation levels could result in an individual receiving a deep dose equivalent in excess of 0.005 rem (0.05 millisievert) in 1 hour at 30 centimeters from the source or from any surface that the radiation penetrates.

GLOSSARY (Continued)

radiological area	Any area within a controlled area which must be posted as a "radiation area," "high radiation area," "very high radiation area," "contamination area," "high contamination area," or "airborne radioactivity area" in accordance with 10 CFR 835.603.
radiological work permit	Permit that identifies radiological conditions, establishes worker protection and monitoring requirements, and contains specific approvals for radiological work activities. The Radiological Work Permit serves as an administrative process for planning and controlling radiological work and informing the worker of the radiological conditions.
raffinate	The portion of a liquid that remains after other components have been dissolved by a solvent. In the refinery process at the FEMP, uranium-bearing feed materials were digested in nitric acid to solubilize the uranium. The uranium was extracted, leaving most of the nitric acid, impurities associated with the materials being processed and small quantities of insoluble, nonextractable uranium in the resulting "raffinate."
Record of Decision (ROD)	A public record documenting the final determination of the selected alternative. Records of Decisions are legally binding documents that are developed in consideration of public comments and fulfill CERCLA requirements.
remedial action (RA)	The actual construction or implementation phase of a Superfund site cleanup that follows remedial design.
remedial design	A phase of remediation that follows the RI/FS and includes the development of engineering drawings and specifications for site cleanup.
remedial investigation	An in-depth study designed to gather data needed to determine the nature and extent of contamination at a Superfund site; establish site cleanup criteria; identify preliminary alternatives for remedial action; and support technical and cost analyses of remedial alternatives.
removal action	Short-term immediate actions taken to address releases of hazardous substances that require expedited response.
runoff	The portion of the precipitation on the land that flows over and off a particular area.
runon	The portion of the precipitation on the land that flows over and on to a particular area.

GLOSSARY (Continued)

Safety Assessment	A brief, factual, and objective document used to screen FEMP projects and activities to determine if non-standard industrial hazards exist. If such hazards are identified a preliminary hazard analysis is typically included in the Safety Assessment along with a recommendation for additional safety analyses. If only standard industrial hazards or standard construction activities are identified, they are documented in the Safey Assessment.
safety basis documentation	The documentation relating to the control of hazards at a facility documentation (including design, engineering analyses, and administrative controls) upon which the DOE depends for its conclusion that activities at the facility can be conducted safely.
scabbled concrete	A concrete that has had a portion of its top surface mechanically removed. This is done to remove the contaminated portion of a concrete slab.
slag	Magnesium fluoride. A reaction product resulting from the thermite reduction reaction (UF_4 [uranium tetrafluoride] + 2Mg [magnesium] = U [uranium] + $2MgF_2$ [magnesium fluoride].
slag leach	A white to gray granular material that is the result of magnesium fluoride dissolved in nitric acid, uranium extraction, and denitrification. The insoluble materials left over were mixed with lime (calcium oxide) to a pH of approximately 11, and pumped to the waste pits. The composition of slag leach is approximately 96.5 percent magnesium fluoride, 3 percent filter aid (diatomaceous earth), and 0.5 percent uranium, with some amount of calcium compounds from the neutralization step, as well as nitrates.
slurry	A thin mixture of a liquid, usually water and insoluble matter.
soil contamination area	Any area where radioactive material contamination exists in a matrix (e.g., soil) at levels exceeding natural background and has not been released for unrestricted use in accordance with DOE Order 5400.5 Radiation Protection of the Public and the Environment.
Solid Waste Management Unit (SWMU)	Any discernible area where wastes have been routinely and systematically released.
Subcontractors Work Area	The area in which the Subcontractor can set up and operate his processing facility. This area is shown on Figure C.1-3.
supernatant	The clear fluid above a sediment or precipitate.

GLOSSARY (Continued)

thermoluminescent dosimeter	Radiation monitoring device used to record the radiological exposure of personnel or areas to certain types of radiation.
top crop	The top portion of a uranium ingot that was sawn off to remove shrinkage cavities and impurities that rise to the top of the melt during solidification.
total effective dose equivalent	The sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).
trailer cake	The dry, white to gray granular material left after the reduction of magnesium fluoride and uranium tetrafluoride. Trailer cake is approximately 96.5 percent magnesium fluoride, 3 percent filter aid diatomaceous earth), and 0.5 percent uranium, with some amount of nitrates.
uranyl ammonium phosphate (UAP)	Generated from 1953 - 1964 in the UAP process in Plant 8. This process was a method of recovering uranium from magnesium fluoride slag and other residues.
uranium metals	Initially formed as a "derby," uranium metal (in the form of derbies and other recycled metal products) were remelted and poured into a coated, graphite mold to form an "ingot." The ingot then underwent a combination of various metal working treatments (sawing, rolling, extrusion, drilling); ending with a precision surface machining of the end product. Through this whole process "top crops," "chips," "turnings," and "spill metal" was created. Although much of the processing effort was directed to the recovery and recycling of these various forms of uranium, much material, which was unfit for recycling, was discarded.
waste storage area	An area located west of the former production areas where solid and slurried wastes from FEMP processes were deposited. This area includes the Operable Unit 1 waste units, as well as two earthen-bermed concrete silos containing K-65 residues, one concrete silo containing metal oxides, one unused concrete silo, two lime sludge ponds, a solid waste landfill, and a biosurge area to treat wastewater.
weighting factor	The fraction of the overall health risk, resulting from uniform, whole body irradiation, attributable to specific tissue (T). The dose equivalent to tissue, T, is multiplied by the appropriate weighting factor to obtain the effective dose equivalent contribution from that tissue.

GLOSSARY (Continued)

white metal boxes	A top-loading metal box measuring approximately 3′ x 4′ x 6′ with a weight capacity of 6,800 lbs. These containers have a volume capacity of 82 cubic feet.
whole body	For the purposes of external exposure, head, trunk (including male gonads), arms above and including the elbow, or legs above and including the knee.
working level	Any combination of short lived decay products of radon in one liter of air that will result in emission of 1.3E5 MeV of potential alpha energy.

ATTACHMENT J.2

PROJECT BACKGROUND

J.2.0 INTRODUCTION

The purpose of this section is to provide background information relative to the Fernald Environmental Management Project (FEMP), in general, and more specifically, relative to Operable Unit 1 (OU1). The following discussion provides background information on activities performed with respect to OU1, general information on the OU1 waste pits, and characteristics of the wastes and soils to be managed within the OU1 remedial action.

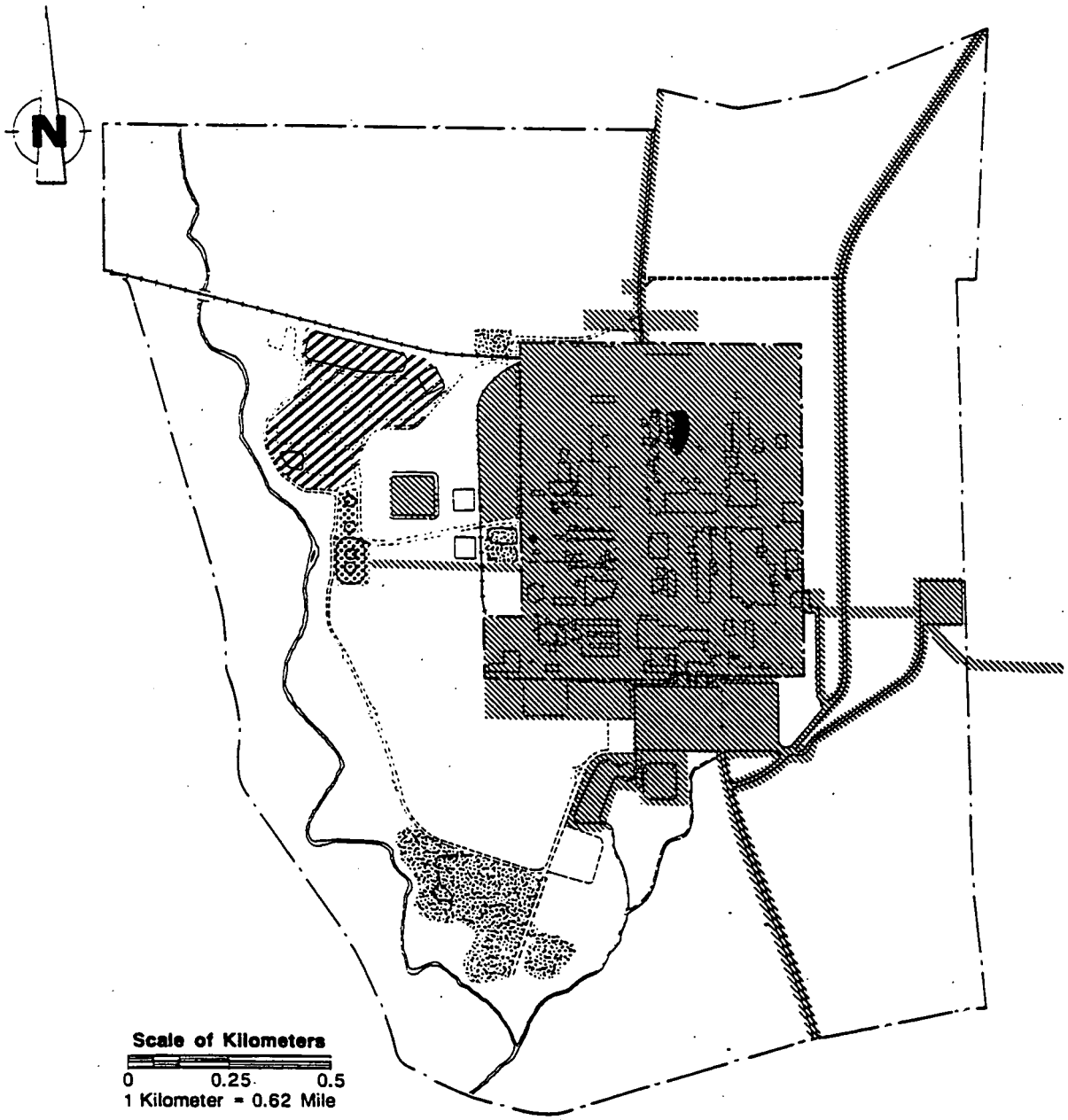
J.2.1 THE FEMP

The Feed Materials Production Center (which the FEMP was formerly known as) produced high purity uranium metal products for the DOE and its predecessor agencies from 1952 to 1989 on this 1,050-acre site. Thorium was also processed, but on a smaller scale, and stored on site. Production activities ceased in 1989, and the production mission was formally ended in 1991. The Fernald site was included on the CERCLA National Priorities List in 1989. The current mission of the site is the safe environmental restoration of the site in accordance with all applicable requirements.

There are five defined areas, known as operable units, undergoing remediation at the FEMP. These operable units were defined based on their locations or the potential for similar technologies to be used in the ultimate cleanup. The operable units are identified in Figure J.2-1 and defined as follows:

- Operable Unit 1 - Waste Pits 1 through 6, the Burn Pit, the Clearwell, and berms, liners, and soil within the operable unit boundary.
- Operable Unit 2 - Two flyash piles, other South Field disposal areas, two lime sludge ponds, solid waste landfill, berms, liners, and soil within the operable unit boundary.
- Operable Unit 3 - Former Production Area and production associated facilities and equipment (includes all above- and below-grade improvements) including, but not limited to, all structures, equipment, utilities, drums, tanks, solid waste, waste, product, thorium, effluent lines, the K-65 transfer line, wastewater treatment facilities, fire training facilities, scrap metal piles, feedstocks, and coal pile.
- Operable Unit 4 - Concrete Storage Silos 1 through 4, berms, decant tank system, and soil within the operable unit boundary.
- Operable Unit 5 - Environmental media, including groundwater, surface water, and soil not included in Operable Units 1 through 4.

Remediation of the FEMP is being conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and the National Oil



LEGEND

- Operable Unit 1
- Operable Unit 2
- Operable Unit 3
- Operable Unit 4
- Operable Unit 5 (Not Shown)

Figure J.2-1 Location of Operable Units Within the FEMP

and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300.

J.2.2 OPERABLE UNIT 1

OU1 is a 15.3-hectare (37.7-acre) area located in the northwest quadrant of the FEMP site. Large quantities of liquid and solid wastes were generated by various chemical and metallurgical processing operations and these wastes were stored or disposed in six waste pits and the Clearwell, or burned in the Burn Pit. These pits are located in a portion of the FEMP Waste Storage Area and are contained within the boundaries of OU1 (see Figure J.2-2).

Beginning in 1952, the waste pits were constructed to store slurried or dry residuals resulting from various stages of uranium processing. Historically, the wastes generated at the FEMP facility, as well as some wastes shipped from other DOE facilities, were disposed on the property. Table J.2-1 provides a summary of the physical features and operating periods of the OU1 waste units, while a summary of the waste pit information is provided in Section J.2.5.

Environmental monitoring and sampling of the waste pits and soil, surface and groundwater, sediment, and air associated with OU1 occurred in several programs beginning in 1984. These investigations include the Characterization Investigation Study (CIS) in 1986-1988, the RI/FS in 1991 and 1992, the ongoing FEMP Environmental Monitoring Program, the site's RCRA Groundwater Study that began in 1985, and other special site programs undertaken to characterize the physical, chemical, and radiological properties of the site. These studies are discussed in Section J.2.3, and the characterization information is discussed in Section J.2.5.

In accordance with CERCLA and the NCP, various remediation alternatives were evaluated for the remediation of OU1, the results of which were documented in the Final FS Report for OU1. Section J.2.4 summarizes what was presented in the OU1 FS Report. On March 1, 1995, USEPA signed the ROD for Remedial Actions at OU1. The selected remedy presented in the OU1 ROD is excavation of the waste pit contents, waste processing and treatment by thermal drying (as necessary to remove free water), and off-site disposal at a PCDF. A more detailed identification of the key components of the OU1 ROD is presented in Section J.2.7.

Various removal actions have also been conducted within OU1 to accelerate cleanup activities prior to final remedial actions (i.e., to address site conditions that pose an imminent threat to public health and welfare or the environment). Specifically, the following five removal actions (details of which are provided in Section 1 of the OU1 RI Report) have been conducted within OU1:

- Removal Action No. 2: Waste Pit Area Runoff Control
- Removal Action No. 6: Control of Exposed Material in Pit 6
- Removal Action No. 11: Waste Pit 5 Experimental Treatment Facility
- Removal Action No. 18: Control of Exposed Material in Pit 5
- Removal Action No. 22: Waste Pit Area Containment Improvement

In addition to the above response actions, Waste Pit 4 also underwent interim RCRA closure, as certified by the Ohio EPA in 1989. Interim closure activities included covering the waste

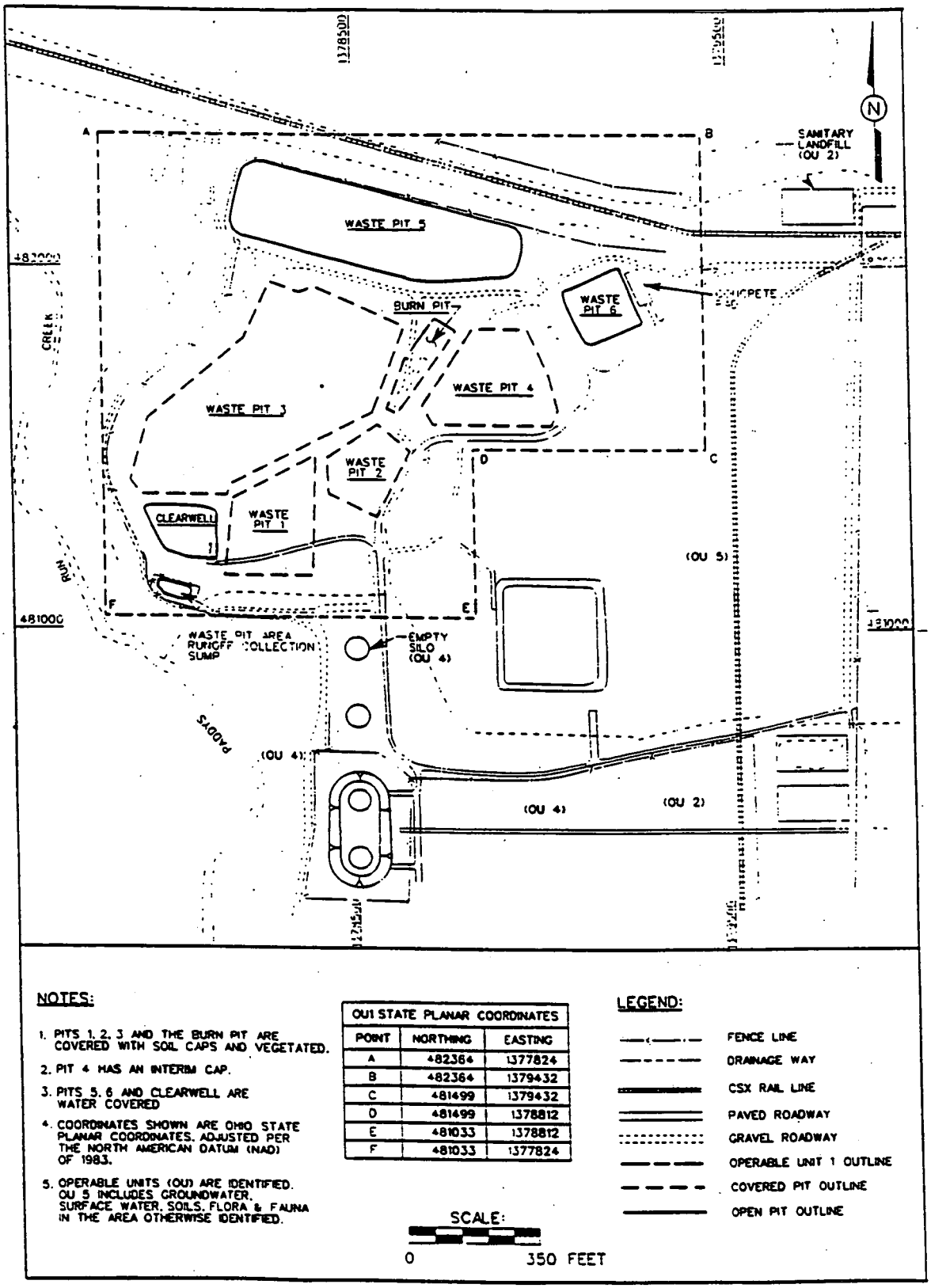


Figure J.2-2 Location of Operable Unit 1

TABLE J.2-1

WASTE UNIT CHARACTERISTICS

Waste Unit	Operation Period	Cover Type	RCRA Status	Liner Type	Est. Waste[a] Volume (CY)	Est. Total[a] Volume (CY)	Approx Depth (feet)	Surface Area (acre)
Pit 1	1952-1959	Soil	SWMU[b]	Clay[c]	48,500	68,400	29.5	2.11
Pit 2	1957-1964	Soil	SWMU[b]	Clay[c]	24,200	37,400	23.5	0.90
Pit 3	1958-1977	Soil	SWMU[b]	Clay[c]	204,100	307,500	42	5.00
Pit 4	1960-1986	RCRA Cap	HWMU[d]	Clay[c]	55,100	72,800	32	1.50
Pit 5	1968-1983	Water	HWMU[d]	EPDM[e]	97,900	97,900	29	3.74
Pit 6	1979-1985	Water	SWMU[b]	EPDM[e]	9,600	9,600	20	0.74
Burn Pit	1957-1968	Soil	SWMU[b]	None	30,300	30,300	26	0.50
Clearwell	1959-1987	Water	SWMU[b]	Clay[c]	3,700	4,300	12	0.65

[a] In-Situ Volumes from Section 1.0 of the Final Remedial Investigation Report for Operable Unit 1
[b] RCRA Solid Waste Management Unit
[c] Native clay liner
[d] RCRA Hazardous Waste Management Unit
[e] 60-mil thick Royal Seal ethylene propylene diene monomer elastomeric membrane
[f] Includes waste, liner, and cover materials
SOURCE: Final Remedial Investigation Report for Operable Unit 1

pit with soil and rocks overlaid with 0.6 meters (2 feet) of clay, compacted to 1×10^{-7} centimeters per second (4×10^{-8} inches per second) permeability, and covered with a 45-millimeter (1/8-inch) thick reinforced Hypalon liner. During this interim closure period, Waste Pit 4 is monitored with groundwater wells and weekly inspections. There is a maintenance plan to repair deficiencies noted during inspections.

J.2.3 REMEDIAL INVESTIGATIONS

As introduced in Section J.2.2, several investigative studies have been performed relative to environmental monitoring and sampling of the waste pits and soil, surface water, groundwater, sediment, and air associated with OU1, beginning in 1984. These activities, which were undertaken to characterize the physical, chemical, and radiological properties of environmental media associated with OU1 are discussed in detail in the Final RI Report for OU1. The nature of the investigations performed are summarized in this section, and the characteristics of the waste pit materials are discussed in Section J.2.5.

Waste Pit Investigations

During the CIS sampling effort, which took place from 1986 to 1987, three types of geophysical surveys and a pit media sampling program were conducted on both the earthen and liquid covered pits. In 1990 and 1991 the RI/FS sampling program supplemented this data with waste media and leachate samples from the earthen covered pits-Waste Pits 1, 2, 3, and 4, and the Burn Pit. Waste Pits 5 and 6 and the Clearwell (the three pits that have standing liquid covers) were sampled under the RI/FS program in 1992. Unlike the CIS waste pit study, for which boreholes were randomly placed after geophysical anomalies had been avoided, the 1991 RI/FS Waste Pit Study required placement of boreholes near the deepest portions of each sampled pit. This was done because, although waste disposed on in Waste Pits 1, 2, and 4 was dry at the time of disposal, the waste became saturated after disposal by infiltration of surface water into the pit. Since a primary goal of the 1991 RI/FS Waste Pit Study was to collect leachate samples containing contaminants that could leak into the Great Miami Aquifer, the deepest portions of these pits, nearest the top of this underlying sand and gravel unit, were selected.

The number of analyses performed on waste pit material (not including leachate, surface water, or QA/QC samples) is as follows:

- Waste Pit 1 - 12 samples were analyzed for inorganic parameters, 12 for pesticides/PCBs, 14 for volatiles, 16 for semivolatiles, 5 for herbicides, 5 for organophosphate pesticides, 6 for dioxins/ furans, and 10 for radiological parameters. In addition, 6 samples were analyzed for TCLP parameters.

- Waste Pit 2 - 9 samples were analyzed for inorganic parameters, 9 for pesticides/PCBs, 14 for volatiles, 13 for semivolatiles, 2 for herbicides and organophosphate pesticides, 4 for dioxins/ furans, and 9 for radiological parameters. In addition, 4 samples were analyzed for TCLP parameters.

- Waste Pit 3 - 13 samples were analyzed for inorganic parameters, 13 for pesticides/PCBs, 16 for volatiles, 15 for semivolatiles, 3 for herbicides and organophosphate pesticides, 6 for dioxins/ furans, and 13 for radiological parameters. In addition, 5 samples were analyzed for TCLP parameters.

- Waste Pit 4 - 11 samples were analyzed for inorganic parameters, 11 for pesticides/PCBs, 13 for volatiles, 14 for semivolatiles, 3 for herbicides, 3 for organophosphate pesticides, 6 for dioxins/ furans, and 10 for radiological parameters. In addition, 6 samples were analyzed for TCLP parameters.

- Waste Pit 5 - 16 samples were analyzed for inorganic parameters, 16 for pesticides/PCBs, 16 for volatiles, 17 for semivolatiles, 10 for herbicides and organophosphate pesticides, and 16 for radiological parameters. In addition, 10 samples were analyzed for TCLP parameters.

- Waste Pit 6 - 13 samples were analyzed for inorganic parameters, 13 for pesticides/PCBs, 13 for volatiles and semivolatiles, 9 for herbicides and organophosphate pesticides, and 13 for radiological parameters. In addition, 9 samples were analyzed for TCLP parameters.

- Burn Pit - 11 samples were analyzed for inorganic parameters, 11 for pesticides/PCBs, 11 for volatiles, 15 for semivolatiles, 2 for herbicides, 2 for organophosphate pesticides, 4 for dioxins/ furans, and 10 for radiological parameters. In addition, 4 samples were analyzed for TCLP parameters.

- Clearwell - 11 samples were analyzed for inorganic parameters, 11 for pesticides/PCBs, 10 for volatiles, 11 for semivolatiles, 7 for herbicides and organophosphate pesticides, and 11 for radiological parameters. In addition, 7 samples were analyzed for TCLP parameters.

The three types of geophysical surveys performed during the CIS study were magnetic, electromagnetic terrain conductivity, and ground penetrating radar. These surveys were performed on Waste Pits 1, 2, 3, and 4 and the Burn Pit, with the results of the study discussed in Section 4 of the OU1 RI Report.

Soils

Both surface and subsurface soil samples were collected around the waste pits. Surface soil, as defined in the OU1 RI Report, includes soil data from 0 to 24 inches deep. This data was used, in part, to determine the nature and extent of surface soil contamination. A total of about 90 surface soil samples were collected and analyzed for various radiological/chemical contaminants. Samples were also collected to determine the nature and extent of contamination in the subsurface soils. In total, 39 subsurface soil samples were collected and analyzed for various radiological/chemical contaminants.

Other Media

In addition to the investigations of the waste pit materials and soils, sampling and monitoring were performed on other media, in support of the RI/FS, the scope and results of which are discussed in the OU1 RI Report. In general, these sampling/monitoring activities included the following:

- Various meteorological conditions (i.e., temperature, wind speed, wind direction) were measured.

- A number of surface water samples were collected at site effluent discharges, drainage ditches and swales in and around the OU1 boundaries, in Paddys Run, etc.

- A number of sediment samples were collected in Paddys Run and from site drainage channels.

- Monitoring for direct radiation, air particulates, and airborne radon gas was and continues to be conducted in and around the FEMP property.

- Groundwater samples were collected from numerous monitoring wells located both within and around the OU1 boundaries.

- Ecological sampling (flora and fauna) was performed both to quantify receptors and to assess contaminant uptake by these receptors.

In addition to the sampling information discussed above, the OU1 RI Report also presents the following information: 1) physical characteristics of the OU1 area, including structural aspects of the pits; 2) nature and extent of contamination; 3) contaminant fate and transport; and 4) the baseline risk assessment.

J.2.4 FEASIBILITY STUDY

In accordance with CERCLA and the NCP, an FS was performed for the development, screening, and detailed analysis of alternatives considered for remediation of OU1. The results of this study are detailed in the Final FS Report for OU1. In addition, the OU1 FS Report also presents information on the following: 1) treatability studies for OU1; 2) analysis of potential Applicable, Relevant, and Appropriate Requirements (ARARs) that apply to OU1; 3) NEPA cumulative impact analysis; 4) wetland/floodplain assessment; and 5) a discussion of the acceptance criteria for waste at NTS and the representative PCDF.

Based on the detailed and comparative analysis of the remedial alternatives in the OU1 FS Report, a Proposed Plan for Remedial Actions at OU1 was developed identifying removal, treatment (by thermal drying), and disposal at a PCDF as the preferred alternative. Based on input from the USEPA, Ohio EPA, and other FEMP stakeholders on this preferred alternative, the OU1 ROD was issued (this ROD is discussed in Section J.2.7).

J.2.5 WASTE PIT INFORMATION

There is a multitude of information which has been generated and is available relative to the OU1 waste pits. The purpose of this section is to present summaries of the various types of information which is available relative to the pits, and the materials contained in the pits. The intent of the following discussions is to provide a summary of the activities and the results of those activities, and should not be the sole basis for determining appropriate remediation activities. For a complete understanding of the waste pit investigations, the reader is directed to read the OU1 RI Report and other documents referenced throughout this document.

J.2.5.1 Location

The OU1 waste pits (as discussed in Section J.2.2, and shown in Figure J.2-2) are located on a relatively level plain approximately 177 meters (580 feet) above mean sea level (MSL). Drainage, including surface water, on the FEMP site is generally from west to east toward the Great Miami River. OU1, however, slopes from east to west toward Paddys Run.

Surface waters found on and adjacent to the FEMP site include the Storm Sewer Outfall Ditch, Paddys Run, and the Great Miami River. Paddys Run originates north of the FEMP site, flows southward along the western boundary of the facility and OU1, and enters the Great Miami River approximately 2.4 kilometers (1.5 miles) south of the southwest corner of the FEMP property. The stream is approximately 14 kilometers (8.8 miles) long and drains an area of approximately 40.9 square kilometers (15.8 square miles). Due to the highly permeable channel bottom, the stream loses water to the underlying Great Miami Aquifer. The stream is intermittent and generally dry during the summer months. Paddys Run is a steep-sided stream whose banks erode severely during high flow periods.

J.2.5.2 History and Physical Features of Waste Pits

Table J.2-1 in Section J.2.2 provided a summary of the physical features and operating periods of the OU1 waste units. Additional detail regarding the history and physical features of the individual waste units is presented in the following discussions:

Waste Pit 1

Waste Pit 1 was constructed in 1952 and is considered a dry pit, since the waste slurries other than effluent from the general sump were filtered or calcined to remove water before they were placed in the pit. This waste pit received primarily depleted magnesium fluoride slag, and depleted residues with smaller amounts of trailer cake, uranyl ammonium phosphate (UAP) filtrate, graphite/ceramics, and general sump sludge. It was, however, used as a clearwell for liquids removed from Waste Pit 2 in 1958 and 1959. Waste Pit 1 was closed and covered with clean fill in 1959, and is currently classified as a Resource Conservation and Recovery Act (RCRA) Solid Waste Management Unit (SWMU).

Waste Pit 2

In 1957, Waste Pit 2 was constructed northeast of Waste Pit 1. Waste Pit 2 is also considered a dry pit and received primarily trailer cake and general sump sludge with smaller amounts of UAP filtrate, raffinate, depleted residues and graphite/ceramics. Waste Pit 2 was also used as a settling basin for neutralized raffinate during 1958 and 1959, prior to completion of Waste Pit 3, because the drying equipment available at that time could not process all of the raffinate produced by plant operations. Waste Pit 2 was closed and covered with clean fill in 1964, and is currently classified as a RCRA SWMU.

Waste Pit 3

Waste Pit 3 was placed in service in December 1958, and was the first waste pit built specifically for settling solids from liquid waste streams. Primarily, lime-neutralized raffinate slurries, as well as contaminated stormwater from the Burn Pit, were pumped to Waste Pit 3. After Waste Pit 2 was filled, Waste Pit 3 received general sump sludge, raffinate, trailer cake and slag leach with lesser amounts of water treatment sludge, and thorium wastes. Starting in December 1958, lime sludge from the Water Treatment Plant was added to supplement the

lime used for raffinate neutralization. Also, large quantities of neutralized residues from acid leaching of uranium-bearing magnesium fluoride slag were pumped to Waste Pit 3 during the late 1960s, prior to completion of Waste Pit 5. In 1973, fill material, including filter cake, slag leach residue, lime sludge, and flyash, was placed in Waste Pit 3, and construction activities were initiated to cover this waste pit with soil. Waste Pit 3 covering activities were completed in 1977; it is currently classified as a RCRA SWMU.

Waste Pit 4

Waste Pit 4 was constructed in 1960 and received solid wastes that included trailer cake, depleted slag, and depleted residues, with lesser amounts of thorium wastes and graphite/ceramics, as well as unknown quantities of noncombustible wastes. The process residues included filter sludges, raffinates, graphite, magnesium fluoride slag, and pyrophoric uranium-bearing materials. Thorium metal and residues were hauled to the waste pits in drums and were placed in Waste Pit 4, when additional metal recovery was not economically feasible. At least 100 drums were deposited on the west side of this waste pit. Waste Pit 4 also received noncombustible trash, including cans, concrete, asbestos, and construction rubble. Lime was occasionally added to standing water within Waste Pit 4 for uranium precipitation prior to the transfer of liquids to Waste Pit 5 for settling and discharge. Barium chloride-contaminated floor sweepings were also disposed in Waste Pit 4 from 1980 to 1983. Disposal activities in Waste Pit 4 were terminated in 1985. Waste Pit 4 is currently classified as a RCRA Hazardous Waste Management Unit (HWMU) and has undergone interim closure. Waste Pit 4 was classified as a HWMU in 1984 because, at that time, it was believed that the pit contained characteristic barium waste, since this waste pit was used to dispose of barium chloride salts from May 1981 to April 1983.

The waste pit was closed in 1986 and cover activities started. During interim closure, the pit was covered will fill material, clay, and a polyethylene liner. Final closure of Waste Pit 4 will be completed in conjunction with remedial actions under CERCLA.

Waste Pit 5

Waste Pit 5 was constructed and placed into service in 1968. Waste Pit 5 served as a settling basin for slurries in the form of general sump sludge, raffinate, slag leach, water treatment sludge, and thorium waste. Lime sludge was added to this waste pit to supplement the lime used to neutralize the raffinate and heat treatment quench water was discharged directly to Waste Pit 5. The supernatant and sludges produced by the co-precipitation of thorium wastes with barium carbonate and aluminum sulfate, and by the precipitation of uranium with calcium oxide, were deposited in Waste Pit 5. The discharge of slurried waste materials into Waste Pit 5 was stopped in 1983 and use of this waste pit as a settling basin was discontinued in 1987. Waste Pit 5 is currently covered by water, and is classified as a RCRA HWMU.

Waste Pit 5 was declared a HWMU in 1991 because, at that time, it was believed that it had received wastewater containing solvent concentrations in excess of 25 ppm spent 1,1,1-trichloroethane (TCA), an F-listed hazardous waste under RCRA. This designation was re-evaluated, and it was found that discharged spent TCA concentrations were less than 25 ppm, thus qualifying Waste Pit 5 for the wastewater exemption under State of Ohio regulations. Accordingly, the designation of Waste Pit 5 as a HWMU, managing listed wastes, has been withdrawn. It is still being formally considered a HWMU, based on the possibility that it contains a characteristic hazardous waste. Waste Pit 5 material will be sampled and analyzed

after treatment to ensure compliance with disposal facility waste acceptance criteria. A final characterization of the waste will be completed at that time.

Waste Pit 6

Waste Pit 6 was constructed from September 1978 to June 1979, and received only depleted wastes in the form of depleted slag and depleted residues. Extrusion residue and heat treatment quench water were also deposited in Waste Pit 6. Use of Waste Pit 6 ceased in 1985. Waste Pit 6 is currently covered by water, and is classified as a RCRA SWMU.

Burn Pit

The clay used to line Waste Pits 1 and 2 during their construction was obtained from an area immediately northeast of Waste Pit 2, which at that time was called the clay pit. A gravel dumping pad was eventually built up on the north end of the resulting excavation so that trucks could back into the deepest part of the waste pit to dump combustible wastes. Thus, the waste pit became known as the Burn Pit. Although records were not kept on all of the materials or amounts deposited, it is known that the Burn Pit was used primarily to burn combustible materials such as laboratory chemicals; pyrophoric and reactive chemicals; oils; low-level contaminated combustible material, such as pallets and skids; and cafeteria debris. In addition, several materials were deposited directly into the Burn Pit, including cans, bottles, general refuse, and laboratory glassware. The Burn Pit was filled in 1968 during the construction of Waste Pit 5, and is currently classified as a RCRA SWMU.

Clearwell

The Clearwell was constructed in 1959 during Waste Pit 3 construction activities and received surface water runoff from the waste pits and surface liquid (supernatant) from Waste Pits 3 and 5. It acted as a final settling basin prior to periodic discharge to the Great Miami River. The Clearwell is currently classified as a RCRA SWMU.

J.2.5.3 Physical Characteristics of Waste

This section provides summary descriptions of the geological, hydrogeological, and geotechnical conditions of the OU1 area waste. These summary descriptions are based on the following geotechnical investigations conducted in the OU1 area: 1) the CIS Geotechnical Evaluation of Waste Pit Material Properties and Boring Logs; 2) the CRU-1 Cooperative Remedy Screening Program Final Report; 3) the OU1 RI Report; 4) the Technical Summary of DEEP Test Data; 5) a report on the CRU-1 Dewatering, Excavation, Evaluation Program: Waste Pits 1, 2, and 3; and 6) a report on the CRU-1 Dewatering, Excavation, Evaluation Program: Waste Pits 5 and 6.

Geological Conditions

The cross sections through OU1 presented in the OU1 RI Report show that the glacial overburden is predominantly clay. Within the clay of the glacial overburden are lenses of coarse, nonplastic (NP) sediments, silt, sand, and gravel. These coarse-grained lenses have complex geometries and are difficult to correlate laterally without closely spaced borings.

Prior to construction of the waste pits, small tributaries to Paddys Run eroded surface features of the waste pit area. The waste pits are constructed above and below the original grade. The material that was used to make the above-grade additions was taken from local

excavations in and around the waste pit area. Consequently, the fill above the original grade in the cross sections is clay- and silt-dominated strata typical of the glacial overburden.

Hydrogeological Properties

Groundwater exists in both perched and water table conditions beneath OU1. Groundwater of the glacial overburden has a radial flow pattern in the area of the pits, with the exception of the Burn Pit. Based on groundwater level contours presented in the OU1 RI Report, groundwater elevations beneath OU1 range seasonally from 518 to 522 feet above mean sea level. Seasonal variations in groundwater elevation are only a few feet in Waste Pits 1 through 4, but vary up to 10 feet in the Burn Pit.

Based on discussions in the OU1 RI Report, horizontal groundwater flow within perched water zones in OU1 is limited in extent to areas of coarse-grained lenses. Two significant areas of coarse-grained lenses have been identified, on the eastern portion of Pit 4 and to the north and east of Pit 6. The potentiometric contours for Type 1 (1000-series) wells, indicates that perched water seepage could occur on the east side of Pit 4. The clay liners for Pits 1 and 3, and the EPDM liners for Pits 5 and 6 are effective low hydraulic conductivity zones or barriers. However, as demonstrated during the installation of the Pit 6 liner, water seepage into the excavation from the sand and gravel lens on the northeast corner of the Pit 6 could occur once the liner is removed.

Infiltration of surface water along Paddys Run into the Great Miami Aquifer affects local groundwater in the waste pit area. During the high precipitation seasons of winter and spring, there is more flow in Paddys Run, and stream water infiltrates into the Great Miami Aquifer, creating a groundwater mound centered beneath Paddys Run. During the dry season, there is relatively little recharge to the regional aquifer, the mound is not present.

Geotechnical Parameters

Table J.2-2 summarizes geotechnical data by waste pit. Table J.2-3 summarizes data from composited samples based on material type. Therefore, composited samples could be from different waste pits but of similar geotechnical classification.

Geotechnical data from the OU1 perimeter dikes can be found in the Waste Pits 3 and 5, and Clearwell Stability Analysis Report. Preliminary geotechnical data for the proposed remediation facility foundation analysis and design can be found in the Preliminary Technical Summary of DEEP Test Data.

J.2.5.4 Chemical Characteristics of Waste

The following is a brief summary definition of the chemical constituents found in the OU1 waste during the RI. Arsenic, barium, chromium, cobalt, copper, lead, magnesium, nickel, silver, and vanadium are the predominant species. Waste Pits 1 and 6 and the Burn Pit contain the lowest levels of inorganic constituents. Waste Pits 3, 4, 5, and the Clearwell contain the highest concentration of inorganic constituents. All of the waste pits contain high levels of magnesium, consistent with the disposal of large quantities of magnesium fluoride slag. Waste Pit 1 is characterized by significant (but lower than other waste pits) levels of barium, cadmium, chromium, and magnesium. Waste Pit 2 is characterized by moderate levels of arsenic, barium, cobalt, copper, lead, manganese, and nickel. Waste Pit 3 has the highest levels of arsenic and manganese. Waste Pit 4 is characterized by significant levels of

TABLE J.2-2

SUMMARY OF GEOTECHNICAL DATA BY WASTE PIT

Parameters	Pit 1	Pit 2	Pit 3	Pit 4	Pit 5	Pit 6	Burn Pit	Clearwell
Dry Density (lb/ft^3)	114.5	82.7	80.0	131.7	71.75	148.2	121.2	103.7
Average Moisture Content (w)(percent Dry Basis)	46	156.9	183.5	29.1	393.4	18.4	30.6	58.8
Optimum Moisture Content Goal (from Compaction Test) (percent)	13	14	26	13	36	9	20	20
Major Types of Waste (USCS Group Name)	ML (low plasticity silt), ML (NP) (non-plastic), GC (clayey gravel with sand)	ML (NP), MH (high plasticity silt), SM (silty sand), SC (clayey sand with gravel), CL (clay)	SM, MH, ML, CL	CL, ML (NP), ML	MH, ML, ML (NP)	ML (NP), SM, ML, MH	CL, MH, SM	CL, ML, SM
Average Specific Gravity of Solids	2.98	2.71	2.66	3.12	2.8	3.18	2.76	2.74
Percentage of Material Less Than 200 Mesh (percent Silt and Clay)	46 - 96	15 - 99	43 - 96	55 - 94	68 - 100	46 - 96	36 - 59	45 - 77
Undrained Internal Friction Angle (deg)	19 - 23	18	13 - 24	NA	15	NA	NA	NA
Cohesion (psi) Drained	4.9 - 6.7	1.7	0 - 2.4	NA	1.0	NA	NA	NA
Drained Internal Friction Angle (deg)	30 - 39	36	28 - 40	NA	32	NA	NA	NA
Cohesion (psi) Undrained	0 - 3.3	0.9	0.0 - 1.6	NA	0.7	NA	NA	NA

NA = Not Applicable
w = Moisture Content

TABLE J.2-3

SUMMARY OF GEOTECHNICAL COMPOSITE SAMPLES BY MATERIAL TYPE

	ML (NP1) Non-Plastic Silt 1	ML (NP2) Non-Plastic Silt 2	MH1 Elastic Silt 1	MH2 Elastic Silt 2	ML Silt	CL Clay	SM Silty Sand
Pit No.	1,4	5,6	5	2,3	6, Burn Pit	4	2, Clearwell
Standard Proctor Maximum Dry Density (from Compaction Test) (lb/ft^3)	116.3	76.89	65.04	77.78	99.04	118.4	102.3
Optimum Moisture Content (from Compaction Test) (percent)	13.4	36.2	56.0	35.4	19.7	18.7	20.1

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antimony, barium, chromium, manganese, and silver. Waste Pit 5 is characterized by significant levels of arsenic, barium, copper, manganese, molybdenum, nickel, and vanadium. Waste Pit 6 is characterized by significant levels of manganese and vanadium. The Burn Pit has lower levels of metal contamination than the other waste pits, but has significant levels of barium, copper, lead, manganese, and zinc. The Clearwell contains significant amounts of barium, copper, lead, manganese, and vanadium. This mirrors the concentrations in Waste Pit 5 leachate in accordance with the Clearwell's use as a collection pit for supernatant liquid from Waste Pit 5.

Polynuclear aromatic hydrocarbons (PAHs), from coal tars, flyash, or fuel oils are concentrated in Waste Pit 2. Aroclors [polycholorinated biphenyls (PCBs)] are generally distributed at concentrations less than 50 ppm throughout the waste pits, but are present only in small amounts in Waste Pit 6 and the Clearwell. Polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans have been reported in very low concentrations in Waste Pits 2, 3, and 4. Waste Pits 5 and 6 and the Clearwell were not analyzed for PCDDs and polychlorinated dibenzofurans. Chlorinated solvents and volatile aromatic compounds were widespread at relatively low concentration in the waste pits.

OU1 does not contain any listed RCRA wastes. In addition, post-treated waste are not expected to exhibit any hazardous characteristics, based on existing analytical results, which have not indicated characteristic concentrations of contaminants, including metals, that exceed regulatory thresholds.

J.2.5.5 Radiological Characteristics of Waste

The predominant radiological contaminants present in all waste pits are uranium-238, uranium-234, and thorium-230. Technetium-99 and strontium-90 are also present, although to a lesser extent. Results of both the CIS and RI/FS sampling programs indicate that depleted and natural uranium are present in the waste pits. A preliminary radiological characterization of the OU1 pit wastes is presented in Table J.2-4.

J.2.5.6 Other OU1 Materials

It is estimated that 7 - 10 percent of the waste pit material (by volume) falls into the category of other OU1 materials, which are essentially any non-soil like materials. By nature, these materials will generally require additional handling because of their size. Materials included in this category include dust collector bags, graphite crucibles and molds, rocks, bricks, ceramics, 55- to 85-gallon drums, reinforced concrete, heavy gage metals, heavy equipment metals, light gage metals, asbestos, transformers, wood and pallets, polyethylene and plastic materials, and large uranium metals pieces such as derbies and top crops. For a more detailed understanding of these material types and quantities, as well as the distribution of these materials by waste unit, the reader is directed to read the OU1 RI Report, the Waste Pit Contents Study Report, and other documents referenced throughout this document.

In addition, other materials have been alleged to have been disposed of in the OU1 waste pits. Specifically, statements made by those familiar with past FMPC operations suggest that large pieces of mobile equipment were disposed of in the waste pits. Verification of these incidents has not been possible. However, the most reasonable, safest, and prudent approach is to

assume that some of the incidents may have taken place, and to take into consideration the ability of the remediation operation to handle such materials.

It should be noted that approximately 45 cubic yards of the total volume of waste material identified in Table J.2-1 (15 cubic yards from each of Waste Pits 1, 2, and 3) are in storage in white metal boxes. Specifically, fifteen top-loading white metal boxes (each measuring approximately 3' x 4' x 6') were filled with material from the above pits (with three cubic yards in each box). This material was gathered for potential design studies which were never undertaken.

J.2.5.7 Pyrophoric Materials

For some of the waste pits, the possibility of encountering uranium metal which may display pyrophoric properties exists. As such, an effort was made by the FEMP to pull together information about the possibility of any uranium metal being initially disposed in the pits, which pits could potentially still contain uranium metal, the likelihood of any remaining metal being in the waste pits, and possible impacts of remanent uranium metal to the project remediation system. The results of this effort were documented in a position paper included as Attachment __, and are summarized below.

Throughout its processing life, the principal products of the FMPC were high purity, metallic uranium rods and tubes of various dimensions. Much of the processing effort was directed to the recovery and recycling of many forms of uranium, as there were significant inherent cost savings if the material could be reclaimed. Also recycling minimized scrap volumes and to a certain extent helped minimize environmental release related losses. This was especially true for enriched and for naturally occurring uranium; depleted uranium did not provide such incentives for recovery. Much material, therefore, which was unfit for recycling, was discarded. This included primarily depleted uranium, both in metal form and as various compounds.

In addition, statements made by those familiar with past FMPC operations suggest that on numerous occasions during production years, uranium metal and other uranium products in varying stages of physical condition were disposed of in the Waste Pits. While it is not possible, for the most part, to confirm any of these claims, neither is it possible to verify that the incidents did not take place. Thus, the most reasonable, safest, and prudent approach is to assume that some of the incidents may have taken place.

Though it was common practice to recycle uranium metal scrap during the process era, it cannot be said with absolute certainty that all uranium metal which may have been disposed in the pit would be completely oxidized. While conditions favorable to the corrosion of uranium exist throughout the waste pits, the pits are an extremely heterogenous mixture of materials. "Inert" areas may exist, where a massive piece of uranium metal may not have the ion availability necessary to completely corrode. The logical conclusion then, is that there may still exist quantities of uranium in the waste pits capable of presenting a pyrophoric hazard if necessary safety contingencies are not planned.

As detailed in Appendix __, those waste units which would seem to present the least concern of encountering pyrophoric uranium metal materials are: 1) Waste Pit 5; 2) the Clearwell; and 3) the Burn Pit. Those Waste Pits which would seem to present the greatest concern of

TABLE J.2-4
RADIONUCLIDE DATA FOR OPERABLE UNIT 1 PIT WASTES
(Detected Values from OU1 RI)

Parameter	Units	Number of Detects	Minimum Detected Value	Maximum Detected Value	Arithmetic Mean	Geometric Mean	Standard Deviation	Coefficient of Variation	95 percent UCL
URANIUM-238	pCi/g	87	22	41900	4337.6	1080.4	8119.6	1.9	5785.3
URANIUM-235	pCi/g	44	0.5	8780	332.6	34.4	1348.8	4.1	674.4
THORIUM-228	pCi/g	79	0.2	2469	98.9	11.2	329.6	3.3	160.7
THORIUM-230	pCi/g	87	3.28	18400	1883.1	271.1	3281.4	1.7	2468.2
URANIUM-235/236	pCi/g	39	2.54	934	142.2	66.2	185.5	1.3	192.3
THORIUM-232	pCi/g	75	0.2	838	39.6	6.8	113.2	2.9	61.4
TECHNETIUM-99	pCi/g	68	0.792	3020	421.0	68.5	697.6	1.7	562.1
URANIUM-234	pCi/g	83	9.9	18200	1125.6	496.9	2191.4	1.9	1525.8
STRONTIUM-90	pCi/g	48	0.11	144	10.1	3.3	26.2	2.6	16.5
RUTHENIUM-106	pCi/g	3	0.84	4	2.1	1.8	1.6	0.8	4.9
POTASSIUM-40	pCi/g	1	11	11	11.0	11.0			
PLUTONIUM-239/240	pCi/g	37	0.05	15	4.1	1.3	5.1	1.2	5.5
PLUTONIUM-238	pCi/g	32	0.04	4.4	0.8	0.4	1.0	1.4	1.1
NEPTUNIUM-237	pCi/g	25	0.3	83	9.5	2.6	19.0	2.0	16.0
RADIUM-226	pCi/g	49	1.41	951	95.7	34.0	157.1	1.6	133.3
CESIUM-137	pCi/g	38	0.5	450	41.9	12.8	78.1	1.9	63.3
RADIUM-228	pCi/g	49	1.5	437	55.4	27.0	77.0	1.4	73.9
GROSS ALPHA	pCi/g	51	161	251319	11431.3	3962.3	35106.7	3.1	19671.2
GROSS BETA	pCi/g	51	192	137290	9507.8	2553.6	22219.8	2.3	14723.1
THORIUM-TOTAL	µg/g	27	3.13	7565	779.0	88.1	1687.9	2.1	1353.1
URANIUM-TOTAL	µg/g	51	213	115500	11486.3	3558.9	24126.8	2.1	25136.9
TOTAL DUPLICATE	PAIRS	1024							

encountering pyrophoric uranium metal materials are: 1) Waste Pit 1; 2) Waste Pit 2; 3) Waste Pit 3; 4) Waste Pit 4; and 5) Waste Pit 6. It should also be noted that the Burn Pit would seem to present the greatest concern of encountering non-uranium metal pyrophoric materials, due to its past history of being a disposal location for laboratory chemicals.

Uranium metal will spontaneously ignite if the heat generated as the uranium oxidizes cannot be sufficiently transferred to its surroundings. Uranium powder may ignite at room temperature in air if exposed to a sufficient shock, such as being dropped a distance of 1 meter. Fine uranium chips will oxidize rapidly at a temperature of 125°C and may ignite if overheated by machining operations. Surface area exposed per unit mass of uranium greatly influences ignition. For example, a fine powder ignites much more readily than a massive piece of uranium.

It is imperative, based on the above discussion, that the project waste excavation, handling, treatment, and load-out remediation components take this possibility into consideration.

J.2.5.8 Radon

Airborne radon measurements are routinely collected both on and off the FEMP property as part of the ongoing FEMP Environmental Monitoring Program. In addition to the Monitoring Program, a radon flux survey was conducted on the Waste Pits 1, 2, and 3 in November 1991 and on Waste Pit 4 in November 1992 to determine the average radon emissions from the waste pits and to verify that the average radon emission from each waste pit was below the NESHAP limit of 20 pCi/m^2/s. The results of these studies are summarized below from the OU1 RI Report.

Waste Pit Radon-Flux Survey

The average radon flux densities calculated for Waste Pits 1, 2, 3, and 4 are 9.1, 6.4, 2.6, and 0.1 pCi/m^2/s respectively; well below the NESHAP emission limit of 20 pCi/m^2/s. The following is a summary by waste pit:

- Waste Pit 1 - There are three areas of higher radon-flux densities, greater than 10 pCi/m^2/s, over Waste Pit 1. These areas are of limited areal extent. The most significant, with a maximum radon-flux density of 75 pCi/m^2/s, lies on the western boundary of Waste Pit 1, next to the Clearwell. Both the RI/FS and CIS data from the waste pit borings indicate the presence of elevated concentrations of Radium-226 near the surface. The observed radon-flux pattern is likely reflecting localized areas that contain higher concentrations of Radium-226, are more permeable, and allow the radon gas to more readily escape.

- Waste Pit 2 - Waste Pit 2 has two areas showing radon-flux measurements greater than 10 pCi/m^2/s with limited areal extent. The maximum radon-flux measurement in Waste Pit 2 was 81.1 pCi/m^2/s located in the southwestern part of the pit. Historical records show that in 1975 a test pit was constructed on Waste Pit 2 for the disposal of raffinate waste from Plant 2/3. The raffinate contains elevated concentrations of radium-226, the source of radon. Moreover, RI/FS and CIS data from the waste pit borings show the presence of elevated concentrations of Radium-226 near the surface of the pit. The occurrence of elevated radon-fluxes over limited portions of Waste Pit 2 is likely due to the

presence of radium-226 in localized areas where soils are more permeable, allowing radon gas to more readily escape into the atmosphere.

- Waste Pit 3 - Like Waste Pits 1 and 2, most of Waste Pit 3 yielded low radon-flux density measurements. Overall, the radon-flux measurements on Waste Pit 3 were much lower than those measured on Waste Pits 1 and 2. Two areas of limited areal extent demonstrated flux measurements greater than 10 Pci/m^2/s. The maximum flux reading in Waste Pit 3 was 48 Pci/m^2/s located on the southern part of the pit. Waste Pit 3 was used for the disposal of neutralized raffinate from the FEMP Refinery (Plant 2/3). The raffinate contained elevated concentrations of Radium-226 which was left behind in the raffinate during the uranium extraction process. Thus, elevated levels of radon were anticipated in the vicinity of Waste Pit 3.

- Waste Pit 4 - Radon flux measurements for Pit 4 were considerably less than observed for the other pits. All 25 samples locations exhibited reading of less than 0.1 pCi/m^2/s.

FEMP Environmental Monitoring Program

Routine airborne radon monitoring at the FEMP is conducted as part of the Environmental Monitoring Program. Results for radon monitoring performed from 1989 through 1992 are summarized below. More details are available in the annual FEMP Environmental Monitoring reports.

Airborne radon measurements are routinely collected both on and off the FEMP property, as part of the ongoing environmental monitoring program. The FEMP monitors radon concentrations at 21 locations along the FEMP perimeter fence. The average annual radon concentration along the FEMP fenceline for 1989 through 1992 was 0.74 pCi/l in 1989, 0.74 pCi/l in 1990, 0.90 pCi/l in 1991 and 0.57 pCi/l in 1992. The maximum annual radon concentration recorded during this period was 1.5 pCi/l observed at the radon monitoring station located at the northeast corner of the site. During this period, none of the observed radon concentrations exceeded either the DOE guideline of 3.0 pCi/l above background levels, or the EPA limit of 4.0 pCi/l for indoor radon concentrations.

J.2.6 OTHER WASTE STREAMS/FEEDS

Certain waste streams, generated outside of OU1, have been identified by the FEMP for disposal to an off-site PCDF. In an effort to integrate site-wide remedial planning, efforts have been undertaken to consolidate common components from the various remediation projects, and have them handled by one project. To this end, because OU1 is the primary contributor for waste shipment off-site to a PCDF, it has been identified as the lead in the handling of wastes generated from other FEMP remediation projects also destined for disposal at a PCDF. It is currently estimated that about 25,000 yd^3 of waste materials generated by other FEMP projects will be handled within the OU1 remediation facility. This waste will be similar in nature to what can be expected during the remediation of OU1, and will primarily consist of soils, although other materials, such as scabbled concrete may also make up a part of this volume. Any waste material received from these other FEMP projects will be certified by that project as meeting the WAC of the PCDF.

J.2.7 RECORD OF DECISION

As indicated previously, the OU1 ROD was signed by the DOE on January 24, 1995 and by the USEPA on March 1, 1995. The OU1 ROD provides summary information on the waste pit history and pit contents, OU1 characteristics, a summary of the OU1 risks, a description of the alternatives analyzed in the OU1 FS and comparative analysis of those alternatives, and a description of the selected alternative. As discussed in the OU1 ROD, the selected remedy consists of the following key components:

- Construction of waste processing and loading facilities and equipment.
- Removal of water from open waste pits for treatment at the site's wastewater treatment facility.
- Removal of waste pit contents, caps and liners, and excavation of surrounding contaminated soil.
- Confirmation sampling of waste pit excavations to verify achievement of remediation levels.
- Segregation and processing (e.g., sorting, crushing, shredding etc.) of waste.
- Treatment of the waste by thermal drying as required to meet the PCDF WAC.
- Waste sampling and analysis prior to shipment to ensure that the PCDF WAC are met.
- Off-site shipment of waste for disposal at a PCDF.
- As a contingency, shipment of any waste that fails (due to radiological concentrations) to meet the PCDF WAC for disposal at NTS.
- Decommissioning and removal of the drying treatment unit and associated facilities, as well as miscellaneous structures and facilities within the operable unit. Oversized material that is amenable to the selected alternative for OU3 would be segregated from OU1 waste, decontaminated, and forwarded to OU3 to be managed as construction rubble.
- Disposition of remaining OU1 residual contaminated soils consistent with selected remedies for contaminated process area soils as documented in the OU5 ROD. Any materials not amenable to the OU5 remedy will be disposed as waste materials (i.e., shipped off site).
- Placement of backfill into excavations and construction of cover system.

Because DOE Order 5820.2A prohibits the use of commercial disposal facilities for disposal of low-level radioactive wastes of the type present in OU1, an exemption to this Order was necessary in order to implement the selected remedy. An exemption request to DOE

Order 5820.2A was approved by DOE Headquarters by memo of November 8, 1994, so that OU1 pit wastes can be disposed at a permitted commercial waste disposal facility.

The OU1 ROD also provided discussion relative to the compliance with ARARs and To Be Considered (TBC) requirements, as well as pertinent DOE Orders. An analysis of these ARARs, with respect to the selected remedy was presented as Appendix B to the OU1 ROD. In addition, the OU1 ROD includes the Responsiveness Summary which documents formal public comments on the OU1 Proposed Plan, and presents the DOE response to all comments received.

J.2.8 REMEDIAL DESIGN WORK PLAN

Pursuant to CERCLA, the NCP, and the Amended Consent Agreement, a Remedial Design Work Plan (RDWP) was generated to present the activities required to develop the final construction plans, specifications, and procurement documents for the implementation of the OU1 selected remedy. This RDWP, which was approved by the USEPA on June 21, 1995, identifies the deliverables and presents the schedule for USEPA (and Ohio EPA) receipt of design submittals for review, comment and approval. The content of these design deliverables is identified in Section J.2.10 of this attachment.

With the adoption of an Alternative Remedial Action Subcontracting Approach (ARASA), as discussed in Section J.2.11, an Addendum to the Remedial Design Work Plan for OU1 (ARDWP) was developed and submitted March 20, 1996 to USEPA and Ohio EPA for review. This ARDWP includes: 1) a definition of ARASA; 2) a discussion on the integration of ARASA and the Design, Build, Operate (DBO) concepts; 3) DOE and ARASA subcontractor responsibilities and RD/RA deliverables; and 4) a discussion relative to Agency review and subsequent finalization of ARASA deliverables. This information (i.e., the approach, deliverables, Agency reviews, etc.) is reflected in this request for proposals.

J.2.9 DEEP LESSONS LEARNED

The Dewatering, Excavation, Evaluation Program (DEEP) was a field program aimed at determining the best technique to excavate the waste pit material. Specifically, DEEP was developed to provide data and observational information for use in optimizing and refining plans for removing waste from the pits by using the safest, fastest, and most economical excavation techniques. DEEP consisted of four phases of activities, as shown in Table J.2-5, which were completed between November 1994 and October 1995. Specific details relative to the tests can be found in the DEEP Work Plan.

The results of the DEEP program investigations are provided in the Technical Summary of DEEP Test Data, which is a part of the OU1 Pre-Final Design Package. The results of the DEEP program investigations are also evidenced in other deliverables within the OU1 Pre-Final Design Package, such as the Waste Excavation Plan and the Design Criteria Document. The following is a summary of what was found through the DEEP investigations:

<u>Dewatering</u>
Strength test data indicate that dewatering is not required to excavate with reasonable efficiency and safety for the top and bottom excavation approach. (A top and bottom excavation method is one wherein one set of equipment is located on top of the pit cap (i.e.,

on top of the soil cover overlying the pit waste) to strip the cap and waste, and a second operation simultaneously completes waste removal from the pit bottom (on the pit waste liner).) Trenching/ramping tests confirm that dewatering is not necessary to achieve safe slopes.

Dewatering testing indicated that water can be removed from the wastes through the use of wells and wellpoints. It is estimated that dewatering wells would provide dewatered conditions in a very localized area near the wells. As a result, wells would have to be spaced very close to one another to achieve any considerable dewatering of the waste. In addition, the remedial facility dryer would provide more efficient moisture reduction of the waste than the use of dewatering wells for waste processing.

To summarize, it appears that dewatering should not be pursued as a means of enhancing soil strength and stability, but may be of value in reducing processing times.

Wet Trenching

The following conclusions are the results of observation from the wet trenching at Pits 1, 2, and 3:

- Mechanical excavation of pit wastes to depths of about 15 to 20 feet using a bucket excavator from the ground surface of the covered pits was demonstrated.

- The waste materials encountered to the depths excavated, behaved like earth materials (i.e., did not flow), and were blocky or granular. Material that exhibited gelatinous behavior was also encountered, especially in Pit 1.

- The cover material for the Waste Pits was general fill: clay, flyash, gravel, and other debris and rubble. The cover thickness in Pits 1 and 2 is from 1 to a few feet, and the cover thickness at Pit 3 is from 10 to 12 feet thick.

- A laminated to stratified, fine-grained waste underlies the cover material in Pits 2 and 3. This material, composed of various layers of plastic and granular materials, is soft, saturated, highly plastic and holds water. Wastes in Pits 2 and 3, which are laminated to stratified, had thin layers of wet, soupy material. The waste material in Pit 1 is soft, saturated, granular, and gelatinous.

- Standing water was encountered at trenches in each of Pits 1, 2, and 3, near the ground surface. Other trenches within these same pits, however, did not have standing water. At the trenches with standing water, large amounts of rubble were also encountered in the cover or shallow waste. This relatively porous rubble creates zones of perched water, often found in the cover material. A large amount of lumber was found in one trench in Pit 3.

- Trench wall collapse was observed in the noncohesive materials comprising the cover. At the shallow depths excavated, the more cohesive waste material underlying the cap often held vertical slopes when it was wet. The material, however, is soft and gelatinous or "pudding like." The ability of these materials to hold steep working slopes at an appreciable height is doubtful. Laboratory

classification tests show the waste material is non plastic to highly plastic silts. As the exposed working face dries, this material exhibits an uncertain behavior.

- Based on visual observation, angle of repose of the wet waste placed in waste piles was generally about 20 to 30 degrees for Pit 2 and 3 wastes. It should be noted that the waste piles were typically no greater than about 8 feet high.

Ramp Excavations

The following conclusions are the results of the field observations made during the ramp excavations made in Waste Pits 1 and 3:

- The materials encountered in Waste Pit 1 behaved similarly to noncohesive silt and sand soils. In addition, the Waste Pit 1 materials appeared to have adequate shear strength to maintain slopes of 1.5H/1V and flatter and to support excavation equipment on horizontal surfaces. When wet, however, the material did not support the excavation equipment as well as when the material was only moist. No slope stability calculations were performed on the Waste Pit 1 excavation scenario, but shear strength test results indicate that Waste Pit 1 materials have higher shear strength than Waste Pit 3 materials.

- The upper materials encountered in Waste Pit 3 behaved similarly to noncohesive, free-draining, sand soils. The material appeared to be a combination of cinders and ash material. The upper material also exhibited adequate shear strength to maintain slopes up to 1.5H/1V and support excavation equipment on horizontal surfaces. The presence of perched water required flatter slopes to remain stable.

- Lower-lying materials in Pit 3 did not behave similarly to soils. Instead, the materials behaved more like a semi-cohesive sludge. When excavated, the material often slumped or flowed into the void created by the bucket excavator. At one point during the excavation, the flowing material caused a slope failure of the overlying noncohesive material.

- The cover material in Waste Pit 1 consisted of 1 to 2 feet of clay material. The cover material in Waste Pit 3 consisted of 1 to 2 feet of clay material and several feet of ash and cinder materials.

- Slow groundwater seepage occurred in both Waste Pits 1 and 3. At approximately 12 to 13 feet below the existing ground surface, a large quantity of groundwater was encountered that infiltrated into the excavation at a rate of approximately 110 to 150 gpm, estimated by using the estimated pit dimensions and the rise in the water level per a given period of time. As a result, sumps and pumps will be required at deeper depths in Pit 1, if equipment will be used on the waste material.

- Stockpiled clay cover material maintained angles of repose between 35 and 40 degrees. Stockpiled noncohesive materials from Waste Pits 1 and 3

TABLE J.2-5

OU1 DEWATERING EXCAVATION EVALUATION PROGRAM (DEEP)
GENERAL DESCRIPTION AND IMPLEMENTATION SEQUENCE

Test[a]	Description/Comments
1. Soil Borings, Sampling and Geotechnical Testing for SPT and CPT	• SPT and continuous sampling during well drilling for geotechnical laboratory testing. • SPT at each trench for CPT correlation. • Two SPT at each de-watering site. • Geotechnical index and physical properties testing.
2. Wet Excavations and Slurry Pumping	• Excavate trenches with a backhoe. • 7 trenches - 2 in Waste Pit 1, 2 in Waste Pit 2, and 3 in Waste Pit 3. Collect bulk sample from each location. • Re-slurry waste, pump and evaluate settling rates. • Three slurry tests, one each in Pit 1, 2, and 3.
3. Dewatering	• Evaluate three well types (large diameter wells, sand packed well points, and driven well points). • Evaluate well spacing (3 wells in each waste pit). • Yield testing of well points and large-diameter wells. • Install remaining wells and well points. • Pump wells without vacuum. • Pump wells with vacuum. • Pump wells with E-O.
4. Dry Excavation	• Trenches and ramp excavation. • Collect bulk samples from each location.

SPT = Standard Penetration Test
CPT = Cone Penetrometer Test
E-O = Electro-Osmosis

[a] Supporting slug tests are performed at existing leachate wells in Waste Pits 1, 2, and 3; a total of 9 locations will be evaluated.

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maintained angles of repose between 30 and 45 degrees. The stockpiled semi-cohesive sludge-like material from Waste Pit 3 maintained an angle of repose of approximately 25 degrees.

- The moist materials at the bottom of the excavation of Waste Pit 1 appeared to compact under the weight of the track loader's tracks. The wet material in the bottom of Waste Pit 1 rutted under the weight of the track loader's tracks, but did not hinder the movement of the track loader. Due to the observed rutting of the wet material, dewatering of the waste or using sumps to collect excess water may be necessary if equipment is to be operated directly on the waste in Pit 1.

- The noncohesive, cinder and ash material in Waste Pit 3 was strong enough to support the weight of the track hoe (bucket excavator). No attempt was made to operate equipment on the semi-cohesive sludge, since it was determined the sludge was too weak to support the weight of the equipment.

- The track loader easily traveled up and down the stockpiled clay and noncohesive materials without affecting the stockpiles' angles of repose. An attempt was made to drive the track hoe on the stockpile of semi-cohesive sludge-like material, which resulted in the track loader driving through, not on, the stockpile.

- From observations and discussion with workers involved in the ramp excavation, it appears the semi-cohesive sludge-like material loses most, if not all, of its shear strength when disturbed (vibrated, stepped on, etc.). As a result, this material will have to be excavated from the side berms or utilizing some other method that does not require equipment to rest on the waste.

J.2.10 COMPLETED DESIGN ACTIVITIES

Based on the OU1 ROD (see Section J.2.7), and in support of the strategy presented in the OU1 RDWP (see Section J.2.8), various design activities were initiated to provide for the development of design documents necessary to implement the selected remedial action. This section provides a discussion, in general, of the results of the Architectural/Engineering (A/E) design efforts expended in support of the OU1 design, and also provides some discussion relative to various studies and tests undertaken which provide information in support of the design.

J.2.10.1 A/E Design Services

In accordance with the schedule and the design strategy presented in the OU1 RDWP, a Preliminary Design package was submitted to USEPA and Ohio EPA on October 24, 1995 for their review. On March 20, 1996, a Pre-Final Design package was submitted to USEPA and Ohio EPA reflecting the inclusion of further detailed design and addressing comments provided by USEPA and Ohio EPA in their review of the Preliminary Design Package. (Table J.2-6 provides a listing of the contents of the Pre-Final design package.)

As indicated previously, the overall objective of the remediation of OU1 is to remove the pit wastes and other contaminated materials, treat them so they meet the disposal facility WAC, load them into railcars, and ship them to an off-site disposal facility. To achieve this objective,

a remediation process was designed consisting of waste retrieval and transfer, waste preparation, drying and off-gas treatment, waste blending and loadout, and wastewater handling. Functions such as blending of waste streams and handling of drainage water from the pit materials occur in more than one area. Figure J.2-3 is a process flow diagram of the remediation facility, as designed, and the following paragraphs provide a discussion of the process reflective of this design.

The design provides for the majority of the waste materials to be retrieved by standard mechanical excavation. During the excavation, the waste is segregated in the pits into four categories for processing: dry materials (including pit wastes, soils, cap, and liner materials), wet materials, processable debris, and nonprocessable debris. This segregation is only a gross initial attempt performed with the excavating equipment. Further separation occurs in the waste preparation area. The wet and dry waste materials are transported by truck to the waste preparation area. The large, non-processable debris would be washed and size reduced if necessary in the pits, then transported by truck to loadout. The large, processable debris is transported by truck to the debris management area. As a contingency, hydraulic mining of pit wastes is also available to retrieve wastes too wet to be handled by dry excavation equipment. The retrieved slurry would be transferred to a tanker truck, from where the slurry is fed intermittently to the dryer.

The design provides that trucks used for waste transfer may be rinsed to remove gross contamination at a location next to the waste preparation area prior to moving along haul roads to minimize fugitive dust emissions. These trucks would be covered with impermeable membranes before transporting.

The waste preparation area operations, provided for in this design, consist of: 1) receiving and storing the retrieved waste; 2) blending; 3) waste segregation; 4) size reduction; and 5) debris management. Waste would be received and stored in piles of wet waste, dry waste, and contingency storage pile of both materials. These piles are designed with a purpose of providing surge capacity for the operating facility during scheduled and non-scheduled down time. The material remains in these piles for a few to several days to allow water to drain from the materials. Wet and dry materials are then blended to produce a mixture with physical properties amenable to the downstream screening and material handling operations. The first screening operation under this design, is a 12-inch vibrating grizzly. The oversize material from the grizzly (+12 inch) is sent to the debris management area, and the undersize material from the grizzly (-12 inch) is discharged to a belt conveyor, where ferrous and non-ferrous metal is removed from the waste stream. The ferrous and non-ferrous metals are sent to the debris management area with the grizzly oversize material.

All material sent to the debris management area would be manually segregated by sight. Large uranium metal pieces such as derbies and top crops found during this segregation are sent to FEMP Materials Management. Bulky debris that requires size reduction is sent to the single-stage shredder, then transported directly to railcar loading. The remaining debris greater than 10 inches in one dimension, and longer than 8 feet in any dimension is sent directly to railcar loading.

The remaining waste from the belt conveyor (after ferrous and non-ferrous metal removal) would be sent to the two stage shredder for size reduction, then transferred to the ten day stock pile used to feed the dryer and mixer. This pile is sampled and analyzed for

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TABLE J.2-6
OU1 PRE-FINAL DESIGN PACKAGE CONTENTS

Deliverable	Components	Content
PACKAGE I (Volume 1 of 2)		
PLANT FACILITIES DESIGN CRITERIA PACKAGE	Design Criteria Document (DCD)	Documents the specific criteria which affect the design, including all pertinent DOE orders, engineering design codes, standards and requirements, etc.
	ARARs and TBC Requirements Tables (Appendix A of DCD)	Discusses how the ARARs and TBCs are addressed through the design.
	Substantive Permit Crosswalk (Appendix B of DCD)	Provides overview of specific substantive permitting and ARAR-driven requirements associated with OU1 remediation.
	Results of the Studies/Tests Relevant to Remediation System Design (Appendix C of DCD)	Summarizes the results of studies, reports, and/or evaluations in support of the design. (Does not include detailed results from DEEP; these are included in the Preliminary Technical Summary of DEEP Test Data).
	Dryer Off-Gas Stack Limits (Appendix D of DCD)	Provides quantitative limits for composition of dryer off-gas.
PLANT FACILITIES ENGINEERING	Process Description	Describes the operation and process used to treat the waste, including wastewater handling as shown on the Process Flow Diagrams.
	Control Philosophy	Covers the general operating and control philosophy for the remediation facility, including a description of the instrumentation concept, on a system-by-system basis for each process shown on the Process Flow Diagrams.
	Mass and Energy Balances	Includes Mass Balances for all pits. The data is organized to correspond with the Process Flow Diagrams.
	Process Flow Diagrams	Includes process flow diagrams for waste retrieval, waste preparation, drying, off-gas treatment, and dried waste blending and loadout.
	Equipment List	Includes a listing of the equipment associated with the process.
	General Arrangement Drawings	Includes a civil conceptual site plan, a civil conceptual utility plan, and material handling plans and sections for the pit waste remediation area, waste preparation area, the drying facility, and the blending and rail loadout facility.
SITE IMPROVEMENT PLAN	Description of Site Preparation Activities	Presents the contents of the Site Improvement Plan and their interrelationship.
	Civil Site Plan	Drawing depicting the general improvements to the site.
	Civil Utility Plan	Drawings showing the location and details of subsurface utilities.
	Civil Grading Plan	Drawings depicting grading plan and details.
	Civil Utility Profiles and Civil Details	Drawings showing details of subsurface features.
	Civil Specifications	Construction specifications to support the site improvement activities.
	Utility Requirements	Estimate of utility needs for the proposed OU1 remediation facilities.
	Design of On-Site Rail Improvements	Description of on-site rail improvements, including a layout drawing showing the rail upgrades and construction required to support on-site operations, along with a description of the logistics associated with receiving, loading, storing, and moving of full and empty cars.
	Off-Site Rail Upgrades	Discussion of the work to be performed by CSXT to repair or upgrade the rail system from the FEMP to Cottage Grove, Indiana.
CONSTRUCTION SCHEDULE	Construction Schedule	Estimate of the time required to complete the remedial action activities including an identification of the major construction tasks and subtasks.

TABLE J.2-6
(Continued)

Deliverable	Components	Content
PACKAGE I (Volume 2 of 2)		
EQUIPMENT SPECIFICATIONS	Debris and Process Shredder	Includes the performance specification for the shredder, motor, and associated electrical materials.
	Indirect Dryer	Includes the performance specification for the indirect rotary dryer, motor, electrical materials, heat tracing, piping, pipe supports, and insulation.
	Off-Gas Control System	Includes draft specifications for the components of the Off-Gas Control System.
	Waste Loadout System	Includes the waste loadout system description.
PACKAGE II		
EXCAVATION PLAN	Waste Excavation Plan	Description of processes to be used in the excavation of waste from each of the various waste units and transfer to the processing facility, the basis of which will be reflective of the results of the Dewatering Excavation Evaluation Program. Discussion will also be provided on stormwater management, dust and fugitive emissions control, and monitoring during excavation, although specific sampling and analysis details will be identified in the Remedial Action Work Plan. The plan will also discuss needed coordination with other FEMP groups related to soils excavation, and the management of oversized debris.
	Materials Management (Appendix A of Excavation Plan)	Discusses various forms of materials which can expected to be generated through the OU1 excavation activities, and special waste handling needs associated with some of these materials (i.e., those which could potentially go to the on-site disposal facility).
	Conceptual Drawings (Appendix B of Excavation Plan)	Provides drawings of various excavation plans, sections, and civil details.
	Technical Summary of DEEP Test Data	Provides a summary of the results of the various phases of DEEP, including physical and engineering properties of the in situ waste.
SITE RESTORATION PLAN - Although identified in the RDWP, this design activity is no longer within the scope of the OU1 design, but will be more appropriately covered on a site-wide basis.		
TRANSPORTATION AND DISPOSAL PLAN	Transportation and Disposal Plan	Description of plan for shipping waste to the PCDF and as required to NTS, including discussion of rail transportation concepts, shipment containers, plan for tracking of shipments, emergency response plan, and waste characterization testing and analysis requirements associated with meeting the waste acceptance criteria of the PCDF.

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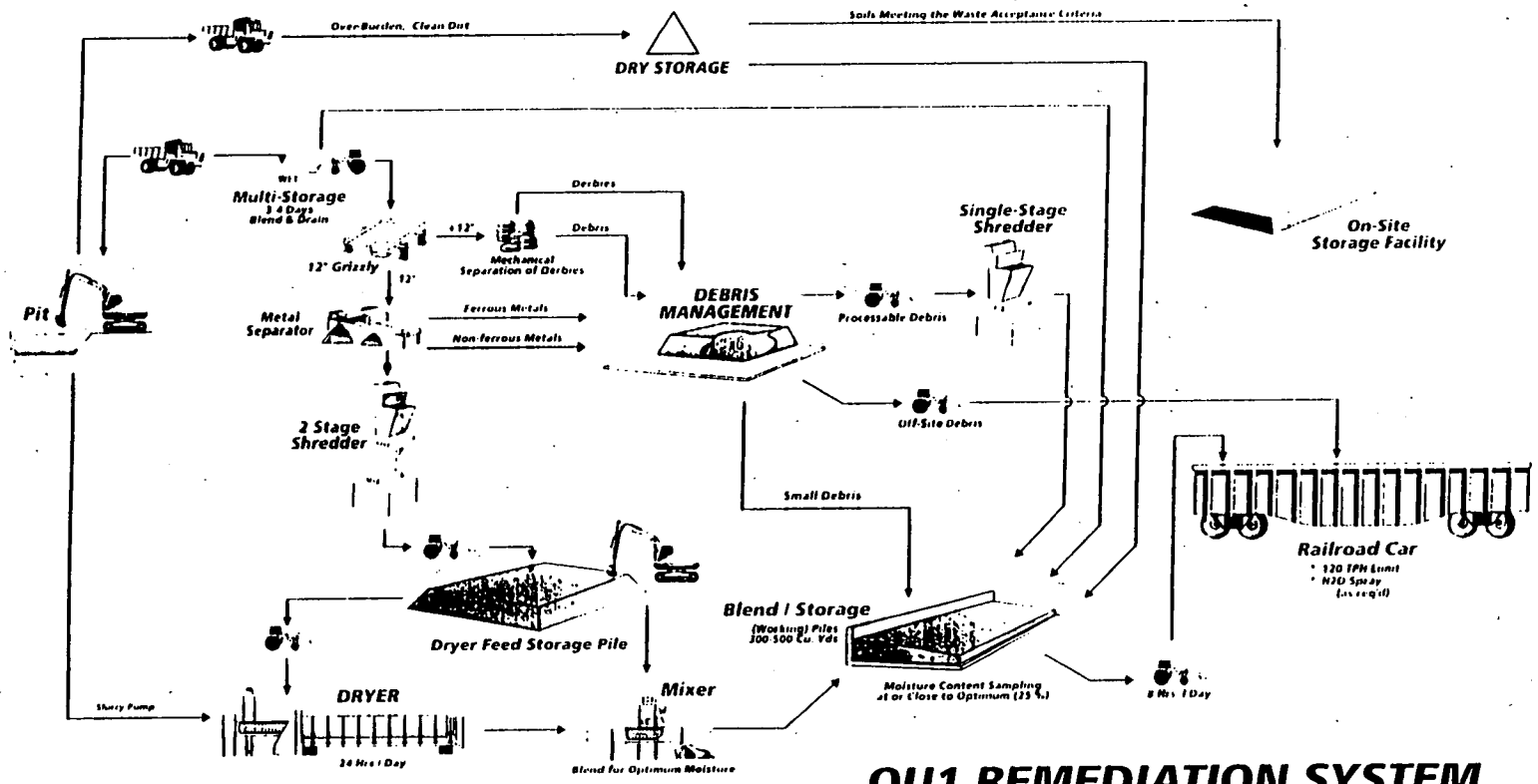

Figure J.2-3 OU1 Remediation System Process Flow Diagram

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radionuclides and screened for total metals before feeding to the dryer. Failed material is reworked in with incoming waste.

Under this design, a portion of the materials from the ten day stock pile are dried to a target moisture content of 10 percent (dry weight basis). Wet materials from this storage pile are then blended with the dried product in a ratio specified to achieve a moisture content of the waste within ± 5 percent of optimum. This material would then be sent to the waste blending and loadout facility.

This design provides for an indirect rotary dryer heated by combustion of natural gas to dry the wastes. The wastes pass through the dryer concurrently with a controlled flow of heated sweep air. The process off-gas consists mostly of water vapor. A cyclone is used to remove the larger particulates from the process off-gas stream. The cyclone is electrically heated to prevent condensation.

The combustion gases do not come in contact with the waste. These combustion gases are used as a source of heat which is utilized in a heat economizer that provides heated sweep air for the dryer. After leaving the heat economizer, the combustion gases are combined with outside air for further cooling. The cooled combustion gases are then released to the atmosphere through a dedicated exhaust fan and stack.

The process off-gas leaving the heated cyclone would pass through the remaining off-gas system, which removes water vapor and other volatiles, particulates, and acid gases. The off-gas leaving the cyclone passes through a combination venturi scrubber and packed tower, which remove the off-gas solids and acid gases, respectively. The packed tower has a cooling effect on the off-gas; therefore, the packed tower also serves to condense a portion of the water vapor from the off-gas. After the packed tower, the off-gas passes through two condensers in parallel for water vapor removal, a heater to lower the relative humidity of the off-gas, a Medium-Efficiency Particulate Air filter for prefiltering and, finally, a High-Efficiency Particulate Air filter for final filtration before release through the exhaust fan and the monitored stack.

The final operation in this remediation process is blending and loadout. Product from the single stage shredder, dry waste and soil, and product from the twin auger mixer are blended together, then transported by front-end loaders to storage piles. These piles are sampled before loading into railcars for activity per mass only. Non-processable debris from the debris management area and larger, non-processable debris from the waste pits are placed on top of the waste already loaded into the railcars. The railcars are then lidded, decontaminated, and shipped off site. At the final loading stage before shipping, the waste in the railcar is at optimum moisture content.

Wastewater handling is an important ancillary operation to this design in support of the waste retrieval operation. Successful mechanical excavation depends on control and removal of stormwater from the pits as well as the water that drains from the pit materials during excavation. Drainage water from the pit materials collected in the waste preparation area is also handled by this operation. All of this water is collected in a sump, then pumped either directly to the Biodenitrification Surge Lagoon, or to the Clearwell and then to the Biodenitrification Surge Lagoon, with ultimate treatment at the FEMP wastewater treatment system.

J.2.10.2 Studies/Tests Supporting Remedial Design

A number of studies and tests have been completed that provide information for remedial design purposes. A summary of the scope of the study or testing work and the results are presented below. Additional detail is available in the referenced material. (One testing program not discussed below, is DEEP which is discussed in Section J.2.9.)

Surrogate Waste Drying Testing

The surrogate waste drying tests, which presents drying test information that has been the basis of the design of the indirect rotary dryer, are discussed in the Report on Execution of Surrogate Waste Drying Tests. That testing was completed with a variety of surrogate blends selected to duplicate the geotechnical properties of the pit wastes. These geotechnical properties are primarily related to particle size and moisture retention capacity as indicated by Atterberg Limits.

Drying rates, dryer operating conditions, heat transfer conditions, retention times, feed conditions, and a variety of other data were collected during the testing. Evaluation of this data led to the recommended dryer type for the above design and the dryer-related information presented in this design. Additional information is included in the document Selection of an Indirect Rotary Dryer.

Thickening/Settling Test Results

Tests on representative wastes were performed to determine thickening and settling properties of the pit wastes. This testing, in conjunction with the vacuum and pressure filtration tests that follow was used in investigating potential water removal processing steps for wastes that may be excavated hydraulically. Overall, the objective of the testing was to determine whether there were mechanical processing steps that could efficiently remove or reduce the water in the wastes and reduce thermal drying requirements. All testing information (thickening/settling and filtration) are presented in the OU1 Waste Settling and Filtration Report.

The thickening and settling test data did not justify including thickening/settling equipment in the remedial facilities design. In situ waste densities are equal to or greater than what could be achieved with thickening/settling. These results indicated that if wastes have to be excavated hydraulically, it will be done without the addition of diluting slurry water.

Vacuum Filtration Test Results

Vacuum and pressure filtration tests were performed on representative wastes to determine the effectiveness and potential use of a filtration step in the waste processing operations. This testing indicated a worthwhile increment of moisture removal was possible with a filtration step. The pressure filtration was actually more effective than the vacuum filtration but was not judged as practical because of the heterogeneity of the pit wastes. However, after testing was completed, the decision was made to not use vacuum filtration.

Solids Flow Testing

Flow properties testing on surrogate wastes was performed to determine bin design parameters for storage of the dried waste product, with the results presented in the Flow Properties Test Report. Minimum bin outlet dimensions and wall angles, and maximum practical moisture contents in the dried surrogates were determined in the testing.

Waste Densification Testing

A preliminary test has been performed to determine whether densification of the waste product is a cost-effective processing step. Burial costs will be based on weight, so increases in density and reductions in volume do not directly reduce waste burial costs. However, preliminary indications are that densification is possible and that it may offer other benefits; therefore, additional study and testing may be warranted.

Shredder Test Results

A debris shredding test was conducted at Komar Industries, Inc. in April 1994. Overall results and conclusions were mixed. There was satisfactory volume reduction but substantial material was not reduced to less than 4 inches in size. Results from this test were used to develop material size limitations reflected in the above design. Additional detail is included in the Shredding Engineering Tests Report.

J.2.11 ALTERNATIVE REMEDIAL ACTION SUBCONTRACTING APPROACH

During the design process discussed in Section J.2.10, a decision was made to evaluate ARASA as a means of implementing portions of the selected remedy for OU1. Specifically, an analysis was performed of the advantages, benefits, and challenges associated with ARASA, as compared to the DBO concept upon which the design discussed in Section J.2.10 is based.

In establishing and validating prospective advantages, benefits, and challenges associated with ARASA, over the DBO concept, the views of those potentially impacted by the project were sought. Specifically, briefings were held with representatives from the USEPA, the Ohio EPA, the Fernald Residents for Environmental Safety and Health (FRESH), the Fernald Citizens Task Force, and the respective affected labor unions.

Additionally, a market survey of industry capabilities in the area of waste remediation was conducted on February 7, 8, and 9, 1996. This market survey sought input from representatives of the remediation industry relative to the following: 1) general industry experience on projects similar to the FEMP remediation activities; 2) industry experience on projects similar to the planned OU1 remediation activities; and 3) thoughts relative to approaches and methodologies concerning the OU1 project. Industry representatives were provided with a presentation outline, and a summary specification of the wastes and the project, and were invited to make a presentation to the FEMP in support of this market survey. In all, three industry representatives provided presentations, the results of which established and/or validated some of the assumptions used in developing the decision document.

The decision process concluded that there is a clear advantage for ARASA, especially in the short term, and that there are no challenges which are "fatal flaws" to adopting ARASA. The recommendation, therefore, was to proceed ahead with the implementation of ARASA, thereby leading to the development of this package, and this request for proposal.

J.2.12 FACILITY SITE IMPROVEMENTS

Through the design efforts discussed in Section J.2.10, various site improvements were identified as being needed to support OU1 remediation activities/facilities, regardless of who would be performing the work. Field work relative to these site improvements was started in April 1996, with the scope of these improvements defined in the site Improvement Plan

contained in the OU1 Pre-Final Design Package as shown on Table J.2-6. The above package consists of CFC drawings and specifications for these improvements, which consist of raising the process area to a suitable elevation; constructing a HDPE lined stormwater basin with a lift station; and associated utility upgrades such as an 8" fire water, gravity and force main storm sewers, culverts, and the removal of water lines. The gravity storm sewer system feeds into the stormwater basin and a 6 inch force main in conjunction with the lift station will transport the stormwater to the BSL. The site improvement work also consists of subballast, ballast and concrete foundation preparation for rail lines 13 and 14. The actual rail and tie construction drawings and specifications are in a separate package titled, *Site Rail System Improvements, Project Order 167*. Natural gas, potable (treated) water, and power will be available from the 2nd Street-Rail 13 location for tie-in.

Figure J.2-1 Location of Operable Units Within the FEMP J.2-2
Figure J.2-2 Location of Operable Unit 1 . . . . . J.2-4
Figure J.2-3 OU1 Remediation System Process Flow Diagram J.2-29

ATTACHMENT J.3.1

SAFETY AT THE FEMP

The FEMP is defined by the DOE as a Non-reactor Nuclear Facility. As such, certain regulations apply to operations within its boundaries or area of responsibility. The WPRAP subcontractor shall comply with the requirements in this section unless exemption is granted by the DOE.

J.3.1.1 ALARA

All subcontractor operations within the boundary of the FEMP shall be performed so as to maintain exposure to radiation As Low As Reasonably Achievable (ALARA). This principle requires that engineering controls shall be applied first before other controls such as personal protective equipment (PPE) are applied.

The ALARA principle shall be applied to operations and maintenance procedures as well as to design, and employees shall be trained to limit exposure by maintaining distance from the source and limiting time of exposure and to interpose barriers (PPE) between themselves and the source.

Attachment J.3.4 provides levels which are defined as ALARA and which shall be met by the subcontractor.

J.3.1.2 Design Reviews

Design Reviews are conducted by FERMCO to ensure that the subcontractor design reflects the principle of ALARA and the use of good engineering practice. The intensity of this review and the extent to which subsequent formal reviews are required depends on the hazard category and performance grade determination described below.

Design Reviews are conducted by the FERMCO Technical Review Board (TRB) of all projects having a performance grade of PG3 or more restrictive (i.e., PG2 or PG1). Any change materially affecting the project safety or operability subsequent to this review must then be approved by the TRB.

The TRB also conducts reviews of projects having a less restrictive performance grade but only to confirm that the proposed assigned performance grade is appropriate and to delegate review responsibility to the FERMCO Project Manager.

J.3.1.3 Performance Grades

Preliminary determination of the performance grade of the WPRAP is PG4 based on the design and operation described in the Pre-final Engineering Design packages submitted to the

USEPA/OEPA on March 21, 1996 and the hazard level which it presents. The subcontractor shall design, construct and operate the proposed facility so that it will remain PG4.

PG4 does not imply that safety or operability are not items of concern, only that the level of documentation and approvals is reduced, as indicated in other attachments within J.3.

J.3.1.4 Safety Basis Documentation

Attachment J.3.2, Safety Basis Documentation, provides a description of the required documentation the subcontractor must produce to support a hazard category determination of "Other Industrial Facility" as defined by DOE-EM-STD-5502.

This hazard category determination and the supporting design documentation produced by the subcontractor shall support a performance grade determination of PG4.

Tables and a simplified calculation procedure are provided to permit the subcontractor to make a preliminary determination of the hazard category so verification that the facility and its planned operation can be determined to be an "Other Industrial Facility" as defined in this section, and the subcontractor can so certify as required by the RFP.

J.3.1.5 FEMP Safety Requirements

Attachment J.3.3, FEMP Safety requirements, presents the General Site Requirements, Requirements for the Subcontractor's Safety and Health Program, and General Training Requirements. These requirements apply to the subcontractor and all lower-tier subcontractors.

J.3.1.6 WPRAP Radiological Safety Requirements

10 CFR 834 and 10 CFR 835 apply to the WPRAP as directed by the Price Anderson Amendment Act of 1988. Attachment J.3.4, WPRAP Radiological Safety Requirements, describes requirements which shall be met by the subcontractor.

J.3.1.7 WPRAP Quality Assurance Requirements

Attachment J.3.5 presents the Quality Assurance requirements which shall be met by the subcontractor. The requirements described in this section are based on a design construction and operation by the subcontractor of a facility which is assessed as a Other Industrial Facility hazard category and determined to be a performance grade PG4. Therefore, the subcontractor is not required to implement the requirements of 10 CFR 830.120 which was promulgated in accordance with the Price Anderson Amendments Act of 1988.

ATTACHMENT J.3.2

SAFETY BASIS DOCUMENTATION

J.3.2 SAFETY BASIS DOCUMENTATION

A safety basis is the combination of information relating to the control of hazards at a nuclear facility (including design, engineering analysis, and administrative controls) upon which the Department of Energy (DOE) depends for its conclusion that activities at the facility can be conducted safely. While the Fernald Site is considered a non-reactor nuclear facility, each project is further categorized, following the criteria set forth in DOE-EM-STD-5502-94, "Hazard Baseline Documentation." This hazard categorization determines the documentation required to adequately assess the hazards associated with the activities planned. This documentation can range from a full seventeen-chapter Safety Analysis Report (SAR) requiring DOE Ohio Field Office (DOE-OFO) approval to a safety assessment (SA) which is FERMCO reviewed and approved. The Hazard Category is also used to trigger, and set the level of effort for, other FERMCO programs such as Operational Readiness Review (ORR), Conduct of Operations (CONOPS), and Price Anderson Amendments Act (PAAA) Quality Assurance reporting.

FERMCO has determined that the activities associated with remediation of the Operable Unit 1 waste pit area can be accomplished as an "Other Industrial Facility" as defined by DOE-EM-STD-5502-94 using the same design conditions and operating parameters that have been inserted into this subcontract and taking credit for segmentation of the activities. Minimum safety basis documentation for an Other Industrial Facility are a health and safety plan, which incorporates Occupational Safety and Health Administration (OSHA) and radiological safety requirements.

J.3.2.1 Segmentation

An activity may be considered a segment for safety analysis purposes if all the following conditions are true:

- The activities are contained within a specific geographical area. Examples include, but are not limited to: the excavation area and waste processing facility.
- The activities contained within the specific geographical area are discrete. Examples include, but are not limited to: construction of the waste processing facility and operation of the waste processing facility.
- An accident or event in one segment cannot directly impact another. Examples include, but are not limited to: excavation, process feed material preparation, and post-processing interim storage areas.

The subcontractor shall document that two out of three of these conditions for segmentation are met as part of their pre-award proposal. The subcontractor shall document that all these conditions are met as part of the post-award safety assessment as described in Section J.3.2.3.1.1.

J.3.2.2 Hazard Category

The subcontractor shall design, construct, operate, and decontaminate and dismantle the remediation facility within the criteria for an Other Industrial Facility as defined by DOE-EM-STD-5502-94.

A Hazard Category is primarily inventory driven, although the DOE may request a higher Hazard Category designation be applied if there are extenuating circumstances such as new technology or public perception of the associated hazards.

J.3.2.2.1 Methodology

Factors which have the greater impact on Hazard Category determination include:

- Size, location, and constituents of concern (COC) (both radiological and chemical) in inventory either as stockpiles awaiting processing, material in process, processed material awaiting load-out into railcars, and exposed excavation surfaces
- Physical properties of the material such as moisture content and particle size
- Energy sources which could disperse material in inventory

FERMCO assessed the Waste Pit Remedial Action Project (WPRAP) excavation and waste handling facility, the predecessors to this subcontract and determined that there were two worst-case scenarios to consider, that affect hazard categorization: a 1-in-100 year high wind event; and explosion and fire at the thermal desorption unit. The subcontractor's processes may vary from the predecessor approach, therefore, a subcontractor-specific safety assessment shall be prepared and submitted prior to construction as described in Section J.3.2.3. However, to facilitate the pre-award submittal process, two tables and one worksheet have been prepared that the subcontractor will use to gauge where their proposed process(es) are with respect to DOE-EM-STD-5502-94 hazard categorization. Verification that the subcontractor's process(es) are within the Other Industrial Hazard criteria is required as part of the pre-award submittal as described in Section J.3.2.3.

J.3.2.2.1.1 Table J.3.2-1 Maximum Potentially Releasable Material for a 1-in-100 Year High Wind Event (kg)

This table lists the maximum potentially releasable material for a 1-in-100 year high wind event for a given exposed surface area. The table presents the data on a pit-by-pit basis which takes into account variations in COCs for each pit. A default column is included to represent blended material stockpiles. This default value shall be used whenever material from two or more pits is mixed or blended together. The table also includes columns which take into account surface roughness. Rough surfaces do not erode as readily as smooth surfaces. The smooth surface designation should be used when the exposed material resembles a sandy beach or flat muddy area. This is anticipated when pits 5 and 6 are dewatered. The rough surface designation should be used for all other cases.

J.3.2.2.1.2 Table J.3.2-2 Maximum Potentially Releasable Material for the Natural Gas Explosion Scenario (kg)

This scenario assumes that there is a natural gas leak, the lower explosion limit is reached, and the gas detonates, dispersing material and initiating a fire.

J.3.2.2.1.3 Hazard Categorization Worksheets

DOE-EM-STD-5502-94 lists criteria for four hazard categories: Nuclear, Non-Nuclear, Radiological, and Other Industrial Hazard. The Hazard Categorization Worksheet (Figures J.3.2-1 and J.3.2-2) will be used to document that the maximum potentially releasable material determined using either Table J.3.2-1 or Table J.3.2-2 is within the Other Industrial Hazard criteria. To do this, the fraction of maximum potentially releasable material to the threshold limits listed in the worksheet shall be less than one. For the Nuclear and Radiological Hazard Category designations, if there are multiple stockpiles or pit surfaces involved, the sum of the fractions shall be less than one. For the Non-Nuclear designation, there is no sum of the fractions rule, therefore, the effect of each stockpile and pit surface is assessed independent of each other. However, each individual fraction shall be less than one.

J.3.2.2.1.4 Worked Example

A set of worked examples is provided in Attachment J.4.6.

J.3.2.3 Safety Basis Documentation Submittals

There are five phases for the Hazard Category/safety basis documentation submittals:

- Pre-award

  The subcontractor shall identify project segments for which separate safety assessments will be prepared. Using the tables and worksheets provided with this subcontract, the subcontractor shall determine the preliminary Hazard Category for the identifies project segments.

- Post-award/Pre-Certified for Construction

  The subcontractor shall submit a Safety Basis Documentation Implementation plan as described in Section J.3.2.3.1.1. Safety basis documentation shall be submitted to FERMCO for review and approval. Content and format are described later in this section.

- Operations/Frequency to be Determined

  Hazard category is primarily inventory-driven, therefore, since the processing inventory is expected to change based on operating requirements, the subcontractor shall document that the activities in each identified segment remain within the Other Industrial Facility criteria. The frequency with which this verification is performed is dependent upon the final design and operating plan(s), therefore, the subcontractor will propose the method and frequency with which this verification is performed as part of

the post-award schedule submittal. The tables and worksheets used during the Pre-award phase may be used for this purpose. The subcontractor has the option of proposing alternative methods.

- Documentation Updates

  Safety basis documentation shall be updated as indicated in Table J.3.2-3. These updates shall be forwarded to FERMCO for review and approval.

The subcontractor shall include in the Post-award/Pre-Certified for Construction submittal, their proposal for incorporating changes in the operational basis used to establish the Hazard Category and start-up of the facility after a prolonged shut-down into the approved safety assessment. All changes in the operational basis used to establish the Hazard Category shall be submitted to FERMCO for review and approval prior to initiation of these changes.

J.3.2.3.1 Documentation Requirements

Safety basis documentation shall be prepared using a graded approach which keeps the rigor and depth of defense for each assessment in proportion to the hazards present. The subcontractor shall provide a safety basis documentation implementation plan which identifies the facility segments and proposes the level of safety basis documentation to be prepared for each.

J.3.2.3.1.1 Safety Basis Documentation Implementation Plan

At a minimum, the following information will be provided in this Implementation Plan:

- Identification and basic description of the segments
- Preliminary site plan indicating the segment locations with respect to each other and at least two FEMP landmarks such as the fence line, bio-surge lagoon, or vitrification pilot plant
- Preliminary process block diagram
- Level of documentation proposed for each segment. At a minimum a safety assessment as described in Section J.3.2.3.1.1.3 is required for each segment. Two additional levels of documentation are possible: hazard category calculations and preliminary hazard assessments, as described in Sections J.3.2.3.1.1.1 and J.3.2.3.1.1.2, respectively.
- Schedule for each segment and level of documentation proposed for each segment.

J.3.2.3.1.1.1 Hazard Category Calculations for each identified segment

At a minimum, the following information will be provided with these calculations:

- Identification of facility, process, or operational segments

- Identification of material inventories (e.g., 400 cubic yard wet stockpile), the radiological and chemical constituents of concern, and their concentrations
- Determination of hazard category 3 threshold limit for the radiological inventory
- Identification of evaluation basis parameters
- Identification of Evaluation Basis Accidents (EBA)
- Identification of Design Basis Accidents (DBA)
- Identification of equations, methodology, and computer models used
- One annotated worked example for each EBA or DBA. At a minimum, this annotated worked example will include:
    - The equations used and the source of those equations
    - Definition of the individual equation parameters (e.g., ARF = Airborne Release Fraction (unitless))
    - Input values to the individual equation parameters
    - Text describing the EBA or DBA
- Summary table listing the "potentially releasable inventory" for each segment, EBA, and DBA
- Summary chart or diagram showing the "potentially releasable inventory" for each segment, EBA, and DBA with respect to Hazard Category 3 thresholds, 40 CFR 302 Appendix B levels, and 40 CFR 302 Table 40 CFR 302.4 levels
- Radiological dose estimates will be determined for workers, co-located workers, and off-site populations as follows:
    - Workers and co-located workers 30 meters and 100 meters from the EBA and DBA
    - Workers and co-located workers in the nearest regularly occupied building or work area. FERMCO will provide location for these workers after the first draft equipment or facility layouts are issued by the subcontractor.
    - The maximally exposed individual (MEI)
    - Off-site populations congregating at the most likely rail operations observation point. FERMCO will provide location for these workers after the first draft equipment or facility layouts are issued by the subcontractor.

These dose estimates will be plotted on a summary chart or diagram showing their relationship with the associated FEMP administrative limits

- Text executive summary of the Hazard Category calculation results

- Hard and electronic copies of spreadsheets and/or computer printouts generated as part of each segment Hazard Category calculation used to support Hazard Category determination issued under a separate cover from the Hazard Category Calculation report.

The subcontractor shall include erosion of exposed contaminated material surfaces due to normal meteorological conditions at the FEMP and during an extreme high wind event in their evaluation basis accident scenarios. The subcontractor shall use "Procedures for Evaluation of Particulate Emissions from Area Sources During a Worst-Case Wind Event at the FEMP," latest revision, to estimate these potentially releasable inventories. The meteorological conditions are described in the referenced "Procedures for Evaluation ...."

J.3.2.3.1.1.2 Preliminary Hazard Assessment (PHA) for each identified segment. At a minimum, the following information will be provided with these assessments:

- Identification of facility, process, or operational segments

- Identification of the tasks and subtasks involved

- PHA tables will be prepared for each task and subtask in a format similar to the attached sample table (Table J.3.2-3). PHA evaluation parameters are:

  - Item Number
  - Potential Hazard
  - Cause(s)
  - Protection/Mitigative Systems
  - Consequences
  - Frequency of Occurrence
  - Ranking
  - Action Item/Comment

  NS-0003, "Safety Assessment Hazard Screening and Classification," will be used as a guideline for estimation of frequency of occurrence and ranking of potential hazards.

- Text executive summary of the PHA

- Text conclusion of the PHA which identifies which items are items of concern or major concern based on their ranking and how these concerns are to be resolved (e.g., project procedure, health and safety plan provisions, or recommended process redesign)

J.3.2.3.1.1.3 Safety Assessment for each identified segment. At a minimum, this assessment will include the following sections:

- Purpose

- Description of the facility, process, or operational segments. Suggested subsections include:
  - Identification of facility, process, or operational segments
  - Text description of the facility, process, or operation under assessment
  - Block flow diagram of the facility, process, or operation under assessment
  - General arrangement or site area plans
- Summary and hazard classification/category. Suggested subsections include:
  - Identification of evaluation basis parameters used to determine hazard category
  - Summary of the hazard category calculation results for the facility, process, or operational segment being assessed
  - Summary of the required level of new documentation required, the appropriate level of approval, and any interaction with DOE in defining the documentation requirement and/or the level of approval
- Preliminary Hazard Assessment. Suggested content includes:
  - Summary of the PHA results for the facility, process, or operational segment being assessed
- Radiological Hazards. Suggested content includes:
  - Identification of all radiological hazards
  - Summary and discussion of the radiological hazard category calculations
  - Summary and discussion of estimated radiological doses to workers, co-located workers, and off-site populations determined in the hazard category calculations for the facility, process, or operational segment being assessed
- Non-Radiological Hazards. Suggested content includes:
  - Identification of all non-radiological (i.e., chemical or biological) hazards
  - Summary and discussion of the non-radiological hazard category calculations
- Industrial Hazards. Suggested content includes:
  - Identify all standard and non-standard industrial hazards
  - Summary and discussion of the PHA conclusions for the facility, process, or operational segment being assessed

- Conclusions. Suggested content includes:
  - Summary of hazard category calculations
  - Summary of PHA conclusions
  - Additional safety basis documentation requirements based on DOE-EM-STD-5502-94, "Hazard Baseline Documentation"
  - Recommendations for EBAs or DBAs not already included in the hazard category calculations
  - Recommendations for additional safety studies not specifically required for less than hazard category 3 facilities, processes, or operations
- Commitments. Suggested content includes:
  - Identification of situations which could change the evaluation basis parameters.
  - Identification of actions which the subcontractor will take to ensure these situations will be detected before the evaluation basis is impacted.
  - Identification of actions which the subcontractor will take to ensure that the existing evaluation basis is maintained.
- References

J.3.2.3.2 Submittal Schedule

Refer to Tables J.3.2-4 through J.3.2-8 for specific submittal requirements.

J.3.2.4 <u>Safety Basis Documentation</u>

The following documents apply to preparation of the safety basis documentation

- Hazard Category Calculations Supporting the WPRAP Safety Assessments for On-Site Rail Operations, Excavation Activities, and Waste Handling Facility
- Hazard Category Calculations Supporting the WPRAP Safety Assessment for Support Facilities
- Preliminary Hazard Assessments for WPRAP Excavation Activities and Waste Handling Facility
- Preliminary Hazard Assessment for WPRAP Support Facilities
- "Procedures for Evaluation of Particulate Emissions from Area Sources During a Worst-Case Wind Event at the FEMP," latest revision

- DOE-EM-STD-5502-94, "Hazard Baseline Documentation"
- DOE-STD-1027-92, "Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports"
- DOE-STD-3005-xx, "Evaluation Guidelines for Accident Analysis of Safety Structures, Systems, and Components"
- DOE-STD-3009-93, "Preparation Guide for U. S. Department of Energy Nonreactor Nuclear Facility Safety Analysis Reports"
- NS-0003, "Safety Assessment Hazard Screening and Classification"

TABLE J.3.2-1
MAXIMUM POTENTIALLY RELEASABLE MATERIAL (Kg) FOR A 1-IN-100 YEAR HIGH WIND

	Pit 1		Pit 2		Pit 3		Pit 4		Pit 5		Pit 6		Clearwell		Burn Pit		Default	
Acres	Smooth	Rough	Smooth	Rough	Smooth	Rough	Smooth	Rough	Smooth	Rough	Smooth	Rough	Smooth	Rough	Smooth	Rough	Smooth	Rough
0.1	20	8	4	1	23	8	9	3	1	0.3	0.15	0.00	0.5	0.01	46	10	6	1
0.2	41	16	8	1	47	17	18	7	2	0.7	0.30	0.00	0.9	0.03	93	20	13	3
0.3	62	24	12	2	71	26	28	10	4	1.0	0.45	0.00	1.4	0.04	140	29	19	4
0.4	83	32	16	2	95	34	37	14	5	1.4	0.60	0.00	1.9	0.05	188	39	25	6
0.5	104	41	20	3	120	43	47	17	7	1.8	0.75	0.00	2.4	0.07	237	49	32	7
0.6	125	49	24	4	145	52	56	21	8	2.2	0.90	0.07	2.8	0.08	286	60	38	8
0.7	147	57	28	4	171	61	66	24	10	2.6	1.06	0.01	3.3	0.09	335	70	45	10
0.8	168	66	32	5	197	70	76	28	12	3.0	1.21	0.01	3.8	0.11	385	80	51	11
0.9	190	74	37	6	223	79	86	31	14	3.4	1.36	0.01	4.3	0.12	435	90	58	13
1.0	212	82	41	6	249	88	96	35	15	3.8	1.52	0.01	4.8	0.13	485	100	64	14
1.2	256	99	49	8	302	106	116	42	19	4.7	1.82	0.01	5.7	0.16	587	121	77	17
1.4	302	116	58	9	356	124	136	49	23	5.6	2.13	0.01	6.7	0.19	690	142	91	20
1.5	329	127	62	10	384	133	147	53	26	6.0	2.28	0.01	7.2	0.2	742	152	97	21
1.6	356	137	66	10	411	142	159	57	28	6.5	2.44	0.02	7.7	0.22	794	162	104	23
1.8	411	158	75	11	467	161	184	66	33	7.6	2.75	0.02	8.6	0.24	899	183	118	26
2.0	468	179	84	13	529	181	209	75	38	8.8	3.06	0.02	9.6	0.27	1005	205	131	29
2.5	612	233	105	16	701	238	275	97	53	11.8	3.83	0.02	12.1	0.34	1274	258	165	36
3.0	761	288	128	19	882	296	343	120	68	15.1	4.62	0.3	14.5	.41	1549	311	204	44
3.5	913	344	150	23	1070	356	413	144	83	18.5	5.40	0.03	17.0	0.48	1829	366	245	53
4.0	1068	400	173	26	1263	417	485	168	99	22.0	6.19	0.04	19.5	0.55	2113	421	288	62
4.5	1225	457	196	29	1462	479	557	192	116	25.6	6.98	0.04	22.0	0.62	2403	476	332	72
5.0	1385	514	220	33	1665	541	631	216	132	29.2	7.77	0.05	24.5	0.69	2702	533	376	81
5.5	1546	572	246	36	1873	605	706	241	148	32.9	8.68	0.06	27.1	0.76	3039	597	420	90
6.0	1709	629	269	40	2085	669	782	265	164	36.7	9.63	0.06	29.6	0.83	3382	661	465	100

Note: 1) Methodology used to determine material release values is based on the Hazard Category Calculation 2 supporting the WRPAP Safety Assessments.
2) Values for each waste reflect the moisture content of that waste pit in equilibrium with a 60% Relative Humidity.
3) The column titles Default is used to calculate release from the blended piles.

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TABLE J.3.2-2
MAXIMUM POTENTIALLY RELEASABLE
MATERIAL FOR NATURAL GAS EXPLOSION (Kg)

Fuel Supply Release Rate (lbs/hr)	Material Released (Kg)
600	43.7
1200	71.9
1500	82.9
1800	93.6
2100	103.1
2400	112.0
2700	120.2
3000	128.2
3500	140.1
4000	151.1
4500	161.8
5000	172.2
5500	182.3
6000	191.2

Note: 1) Methodology used to determine material release values is based on the Hazard Category Calculation 2 supporting the WRPAP Safety Assessments. This method increases the stockpile surface area to equal the blast effect diameter.

Table J.3.2-3

Preliminary Hazard Assessment Project Title	Hazard Category	
	Issue Date	
	Analysis Is	
	Project Stage	

Basis Document	
Task:	
Hazard Selection Criteria	• Worker exposure to physical, chemical or radiological hazards while performing the identified task/subtask • Spread of contamination due to inadequate administrative controls • Release of toxic or radiological materials to the atmosphere, ground, or groundwater due to catastrophic failure of a system, structure, or component

Subtask:

Item	Potential Hazard	Cause(s)	Protection and Mitigative Systems	Consequences	Frequency of Occurrence	Significant Hazard	Action Item/Comment

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FERMCO Request for Proposal Number 96P157987

Table J.3.2-4 Safety Basis Documentation Submittal Matrix

	Document	SOW Section	Submittals		Timing	Updates	Document Control
			Type [1]	Minimum FERMCO Review Cycle, Working Days per Submittal			
1	Safety Basis Documentation Implementation Plan	J.3.2.3.1.1	• 60% Draft • Final	10	Final approved prior to initiation of Hazard Category Calculations and Safety Assessment	None	Yes
2	Hazard Category Calculations	J.3.2.3.1.1.1	• Annotated Outline • 60% Draft • Final	10	Final approved prior to Safety Assessment Final Submittal	As needed due to change in evaluation basis	Yes
3	Preliminary Hazard Assessment	J.3.2.3.1.1.2	• Annotated Outline • 60% Draft • Final	10	Final approved prior to Safety Assessment 60% Draft	As needed due to change in evaluation basis	Yes
4	Safety Assessment	J.3.2.3.1.1.3	• Annotated Outline • 60% Draft • Final	10	Prior to Certified for Construction Package Issued for Approval	Annual (DOE 5480.23)	Yes
5	Hazard and Operability Analysis (HAZOP)	J.3.2.3.1.1.4	• Final Tables with Summary Report	10	Prior to Authorization to Operate	As needed due to change in evaluation basis	Yes

1. Number of copies for each submittal is as follows:

   Annotated Outline: 1-reproducible; 2-bound
   60% Draft: 1-reproducible; 5-bound
   Final: 1-reproducible; 10 bound
   HAZOP Final Tables with Summary Report: 1-reproducible; 2-bound

Table J.3.2-5 Safety Basis Documentation Implementation Plan Submittal Matrix

Key: ○ Partial or draft
● Complete

	Item	60% Submittal	Final Submittal
1	Identification and basis description of the segments	●	
2	Preliminary site plan indicating the segment locations with respect to each other and at least two FEMP landmarks	○	●
3	Preliminary block diagram	●	
4	Level of documentation proposed for each segment	○	●
5	Schedule for each segment and level of documentation	○	●

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TABLE J.3.2-6
Hazard Category CALCULATION SUBMITTAL MATRIX

Key: ○ Partial or draft
• Complete

	Item	Annotated Outline	60 percent Submittal	Final Submittal
1	Submittal section titles	•		
2	Submittal section abstract in 25 words or less	•		
3	Submittal subsection titles	•		
4	List of open items for which the subcontractor would like clarification	○	•	
5	Subcontractor recommendations for further investigation or inclusion to the scope of work	○	•	
6	Identification of facility, process, or operational segments		•	
7	Identification of material inventories		○	•
8	Identification of the radiological and chemical constituents of concern and their concentrations		○	•
9	Determination of Hazard Category 3 threshold limit for the radiological inventory		○	•
10	Identification of evaluation basis parameters		•	
11	Identification of evaluation basis accidents (EBAs)		•	
12	Identification of design basis accidents (DBAs)		•	
13	Identification of equations, methodology, and computer models used		•	
14	One annotated worked example for each EBA or DBA			•
15	Summary table listing the "potentially releasable inventory" for each segment, EBA, and DBA			•
16	Summary chart or diagram showing the "potentially releasable inventory" for each segment, EBA, and DBA with respect to Hazard Category 3 thresholds, 40 CFR 302 Appendix B levels, 29 CFR 1910.119 or 40 CFR 355 thresholds, and 40 CFR 302 Table 40 CFR 302.4 levels			•
17	Radiological dose estimates for workers, co-located workers, and off-site populations		○	•
18	Summary chart or diagram of radiological dose estimates with respect to the associated FEMP administrative limits			•
19	Text executive summary of the Hazard Category calculations results		○	•
20	Hard and electronic copies of spreadsheets and/or computer printouts generated as part of each segment Hazard Category calculation			•

TABLE J.3.2-7
PRELIMINARY HAZARD ASSESSMENT (PHA) SUBMITTAL MATRIX

Key: ○ Partial or draft
• Complete

	Item	Annotated Outline	60 percent Submittal	Final Submittal
1	Submittal section titles	•		
2	Submittal section abstract in 25 words or less	•		
3	Submittal subsection titles	•		
4	List of open items for which the subcontractor would like clarification	○	•	
5	Subcontractor recommendations for further investigation or inclusion to the scope of work	○	•	
6	Identification of facility, process, or operational segments		•	
7	Identification of tasks and subtasks involved	○	•	
8	PHA tables with the following column entries: item number and potential hazard	○	•	
9	PHA tables with the following column entries: cause(s), protection/mitigative systems, consequences, and action item/comment	○	•	
10	PHA tables with the following column entries: frequency of occurrence and ranking		○	•
11	Text executive summary		○	•
12	Text conclusion which identifies which items are items of concern or major concern based on their ranking		○	•
13	Text conclusion which identifies how the items of concern or major concern are to be resolved		○	•

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TABLE J.3.2-8
SAFETY ASSESSMENT SUBMITTAL MATRIX

Key: ○ Partial or draft
• Complete

	Item	Annotated Outline	60 percent Submittal	Final Submittal
1	Submittal section titles	•		
2	Submittal section abstract in 25 words or less, unless otherwise noted on this Matrix	•		
3	Submittal subsection titles	•		
4	List of open items for which the subcontractor would like clarification	○	•	
5	Subcontractor recommendations for further investigation or inclusion to the scope of work	○	•	
6	Purpose		•	
7	Description of the facility, process, or operational segments	○	•	
8	Summary and hazard classification/category	○	•	
9	Preliminary hazard assessment	○	•	
10	Radiological hazards		○	•
11	Non-radiological hazards		○	•
12	Industrial hazards		○	•
13	Conclusions		○	•
14	Commitments		○	•
15	References		○	•

FIGURE J.3.2-1
HAZARD CATEGORIZATION WORKSHEET FOR THE 1-IN-100 YEAR HIGH WIND EVENT

Nuclear Facility			
	DOE-STD 1027	Potentially Releasable Material (Kg)	Fractional Values
	Column A	Column B	B/A
Waste Pit 1	5.35E+04		
2	2.25E+04		
3	4.20E+04		
4	4.03E+04		
5	6.46E+04		
6	1.15E+05		
Burn Pit	7.57E+04		
Clearwell	7.57E+04		
Default	2.25E+04		
Fractional Sum			

Radiological Facility			
	40CFR 302 Appendix B Criteria (Kg)	Potentially Releasable Material (Kg)	Fractional Values
	Column A	Column B	B/A
Waste Pit 1	7.74E+02		
2	3.69E+02		
3	6.05E+02		
4	5.77E+02		
5	1.04E+03		
6	2.70E+03		
Burn Pit	1.01E+03		
Clearwell	1.57E+03		
Default	3.69E+02		
Fractional Sum			

Non-Nuclear Facility				
	Chemical Species	40 CFR 302.4 Criteria (Kg)	Potentially Releasable Material (Kg)	Fractional Values
		Column A	Column B	B/A
Waste Pit 1	Chloroform	1.25E+03		
2	Benzo[a]pyrene	3.78E+03		
3	Arsenic	1.49E+02		
4	Chloroform	3.49E+03		
5	Arsenic	1.62E+02		
6	Arsenic	6.00E+04		
Burn Pit	Arsenic	2.16E+04		
Clearwell	Arsenic	2.52E+04		
Default	Arsenic	1.49E+02		

Notes:
1) The method used to determine the criteria (Kg) is found in Hazard Category Calculation Number 2, issued March 28, 1996.
2) Sodium is not considered in the criteria because sodium values in the CIS and RI do not represent the regulated chemical species.
3) The radionuclides hazard categorization criteria is based on a summation of the fractions for all radionuclides.
4) The chemical hazard categorization criteria is based on the fraction for each chemical species.

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FIGURE J.3.2-2
HAZARD CATEGORIZATION WORKSHEET
FOR THE EXPLOSION SCENARIO

Nuclear Facility			
	DOE-STD 1027 Criteria (Kg)	Potentially Releasable Material (Kg)	Fractional Values
	Column A	Column B	B/A
Waste Pit 1	5.35E+04		
2	2.25E+04		
3	4.20E+04		
4	4.03E+04		
5	6.46E+04		
6	1.15E+05		
Burn Pit	7.57E+04		
Clearwell	7.57E+04		
Default	2.25E+04		
Fractional Sum			

Radiological Facility			
	40CFR 302 Appendix B Criteria (Kg)	Potentially Releasable Material (Kg)	Fractional Values
	Column A	Column B	B/A
Waste Pit 1	7.74E+02		
2	3.69E+02		
3	6.05E+02		
4	5.77E+02		
5	1.04E+03		
6	2.70E+03		
Burn Pit	1.01E+03		
Clearwell	1.57E+03		
Default	3.69E+02		
Fractional Sum			

Non-Nuclear Facility				
	Chemical Species	40 CFR 302.4 Criteria (Kg)	Potentially Releasable Material (Kg)	Fractional Values
		Column A	Column B	B/A
Waste Pit 1	Chloroform	1.25E+03		
2	Benzo[a]pyrene	3.78E+03		
3	Arsenic	1.49E+02		
4	Chloroform	3.49E+03		
5	Arsenic	1.62E+02		
6	Arsenic	6.00E+04		
Burn Pit	Arsenic	2.16E+04		
Clearwell	Arsenic	2.52E+04		
Default	Arsenic	1.49E+02		

Notes:
1) The method used to determine the criteria (Kg) is found in Hazard Category Calculation Number 2, issued March 28, 1996.
Sodium is not considered in the criteria because sodium values in the CIS and RI do not represent the regulated chemical species.
The radionuclides hazard categorization criteria is based on a summation of the fractions for all radionuclides.
The chemical hazard categorization criteria is based on the fraction for each chemical species.

ATTACHMENT J.3.3

FEMP SAFETY REQUIREMENTS

This attachment provides a description of safety and health and associated training requirements for all work performed at the FEMP.

J.3.3.1 General Site Requirements

The subcontractor shall submit to FERMCO for compliance review and approval the subcontractor's Safety and Health Program which shall incorporate the information from this section and all programs as required by OSHA.

The subcontractor shall agree to abide by FERMCO's Safety and Health Bill of Rights. The contents of the bill of rights are as follows.

FERMCO guarantees to all workers at the Fernald site that the primary mission is the safe, early, and least-cost cleanup and remediation of the Fernald site, while preserving the safety and health of each employee. To achieve our mission, FERMCO provides an avenue for all individuals to contribute to the safety excellence process. FERMCO requests that all Unions, employees, supervisors, managers and subcontractors will reaffirm their commitment to work to prevent accidents and eliminate the conditions that lead to injuries and illnesses.

SAFETY AND HEALTH GUARANTEES

All employees at the FEMP are guaranteed the following rights.

1. The RIGHT TO KNOW the hazards associated with the performance of the employee's job, including timely notice of new hazards or developments, and access to the employee's medical and exposure records within the time frames mandated by applicable regulations or orders.

2. The RIGHT TO REPORT safety and health concerns or violations without fear of reprisal, including the right to report to OSHA or DOE.

3. The RIGHT TO STOP WORK which the employee reasonably believes to be hazardous by notifying the supervisor of the work, including the right to use the formal grievance process to resolve such issues. As part of the Right, no employee will suffer any reprisal or the loss of regular hourly pay for refusing such work.

4. The RIGHT TO ACCESS safety and health information including completed accident/incident investigations, consistent with applicable laws, including restrictions of the Privacy Act. The right to participate in investigation and the right to talk to inspectors from governmental agencies. This right to access applies to any employee or their designated Union representative.

5. The RIGHT TO INPUT regarding safety and health issues through the continuation of various applicable Joint Employee/Management Safety and Health Committees and initiatives.

6. The RIGHT TO PERSONAL PROTECTIVE EQUIPMENT (PPE) provide by FERMCO or the subcontractor.

7. The RIGHT TO PARTICIPATE IN THE SAFETY EXCELLENCE PROCESS by providing input into the planning and approach to job tasks, development of protection methods and feedback on job training.

J.3.3.1.1 Governing Documents

The subcontractor's attention is called to General Provision A.37 (Environment, Safety and Health) and with Special Requirement H.56 (Accident Prevention). All work on this project shall be performed in accordance with OSHA (29 CFR 1926 and 29 CFR 1910), state and local regulations and the requirements provided in these subcontract documents. FERMCO shall make the final interpretation of safety regulations during this project. Interpretations will be based on OSHA and DOE standard interpretations.

FERMCO is required to comply with U.S. Department of Energy (DOE) DOE Order 5480.4, "Environmental Protection, Safety and Health Protection Standards," and DOE Order 440.1, "Worker Protection Management For DOE Federal And Contractor Employees." The specific portions of these documents applicable to this subcontract are delineated in this section.

J.3.3.1.2 Health and Safety Requirements

The subcontractor shall submit for review and approval project specific Health and Safety Plans (HASP) for the Pre-Operational and Operational phases of the project. The subcontractor shall conduct a hazard analysis for each phase of the project.

The subcontractor shall develop a HASP that meets the requirements for 29 CFR 1910.120 and 1926.65. FERMCO will assist the subcontractor in writing the sections of the HASP dealing with Emergency Response (29 CFR 1910.120 (l) and (g).

The plan shall be reviewed and updated on a six month basis or when significant changes occur.

The subcontractor shall develop Safe Work Plans for tasks associated with the Pre-Operational, Decontamination and Dismantlement, and Site Restoration phases of the project. The Safe Work Plans will supplement the Health and Safety Plans and are an acceptable method of Hazard Analysis.

In accordance with Section C.6 of this document, the subcontractor shall incorporate Safety Requirements into procedures used during the Operations and Maintenance Phase of the project. The procedures will supplement the Health and Safety Plan and are an acceptable method of Hazard Analysis.

J.3.3.1.3 Incident Rate Goals

The subcontractor's project shall meet or better the site goals for Incident Rate (recordable $\leq$ 2.25, restricted work $\leq$ 1.50 and lost time work 0.0). Calculated on a yearly basis using the formula from "Recordkeeping Guidelines for Occupational and Illness," US. Department of Labor OMB No. 1220-0029.

FERMCO will review Project Incident Rates at least on a quarterly basis. If rates are exceeding established contract limits, the subcontractor shall submit to FERMCO an action plan detailing how the subcontractor will lower the rates. Success of the action plan will be determined by movement of rates over the next two quarters. If a downward trend is not seen, FERMCO reserves the right to dictate changes to the subcontractor's safety program. All costs associated with FERMCO dictated changes will be borne by the subcontractor.

J.3.3.1.4 Radiological Requirements

Radiological requirements are located in Attachment J.3.4 (WPRAP Radiological Safety Requirements). Exceptions: Requirements for bringing material on site are found in Sections J.3.3.1.5 and J.3.3.2.6.2.

J.3.3.1.5 Inspection of Tools and Equipment

The subcontractor shall notify the FERMCO Project Coordinator at least two (2) working days prior to bringing tools and equipment, including fuel storage tanks, (See Special Requirement H.28) on site.

When OSHA requires equipment inspection by a competent person, the certification of inspection must accompany the equipment.

The subcontractor shall inspect equipment and tools prior to and upon arrival at the project. Inspection shall include, but not be limited to, the following: OSHA compliance, damage that could render the item inoperable, oil, hydraulic or other fluid leaks. The subcontractor shall have written inspections available for FERMCO review.

Power tools shall have guards and other apparatus in accordance with the manufacturer's data. The subcontractor shall be prepared to supply this data in case of questions arising during FERMCO review.

All equipment, including mobile powered personnel lifts, shall have the factory approved operator/safety manual for use by the operator and personnel. This manual shall either be with the equipment at the time of use or be on file, available for reference when requested. All safety requirements within the manual shall be followed.

The subcontractor must provide FERMCO with a list of all materials and items to be brought on site, which have been used in conjunction with radioactivity in the past, and include information such as what the items were used for, when they were used, and the radioactive isotopes with which they were used. FERMCO reserves the right to reject the subcontractor's request to bring such items on site. (See Attachment J.3.4 for radiological requirements for release of equipment, materials, and office/storage trailers from site).

The subcontractor is to complete a FERMCO approval form (RP-0014 Radiation Source Accountability and Control) and provide 10 days prior notice of incoming radioactive materials. The subcontractor is to provide documentation to FERMCO Radiological Control on the radioactive materials prior to bringing them on site. Radiological sources may only be brought on site with prior approval of the FERMCO Manager of Radiological Compliance and notification of the Radiological Dosimetry Source Custodian (Information to be provided by the subcontractor shall include the type and activity of the source, its intended purpose, how long

the source is expected to remain on site, and what controls will be placed on the sources to ensure their stability while on site).

J.3.3.1.6 Hazardous Chemicals

The subcontractor is required to comply with the requirements of 29 CFR 1926, Subpart D (Occupational Health and Environmental Controls), 29 CFR 1926, Subpart Z (Toxic and Hazardous Substances), 1910.1200 Hazard Communication, and 29 CFR 1910, Subpart Z (Toxic and Hazardous Substances).

The subcontractor is responsible for conducting personnel and area air monitoring for hazardous substances (excluding Radiological Contaminants). Monitoring shall be conducted to comply with 29 CFR 1910.120 (h).

FERMCO shall be informed of all monitoring results on a weekly basis. Reports are to be sent in hard copy format.

Workers whose exposure is monitored shall be informed of the monitoring results.

All air monitoring conducted by the subcontractor shall meet the sampling protocols set forth by OSHA and NIOSH. All instrumentation used for air monitoring shall be calibrated according to manufacturer's specifications and records showing calibrations are to be kept on site for FERMCO review.

FERMCO reserves the right to conduct personal air monitoring on any person associated with this project.

Asbestos

Asbestos containing material was disposed of in the waste pits. This material was mainly in the form of transite panels and pipe insulation. Sampling data has shown that the waste material in the pits contains less than 1% asbestos. Therefore, material from the waste pits will not be considered asbestos containing material.

For compliance, the subcontractor shall conduct an exposure assessment for asbestos for each job class. The monitoring shall be conducted by an independent contractor.

No asbestos hygiene facility will be required.

Workers who are involved in handling pit waste shall be trained in accordance with 29 CFR 1926.1101 (k)(9)(IV).

J.3.3.1.7 Monthly Manpower Report

The form titled "Subcontractor Manpower Report" (Figure J.3.3-1) shall be completed by the subcontractor and submitted to FERMCO by the third day of each month. Required information shall be reported for the subcontractor and all of its lower tier subcontractors who performed work for FERMCO during the previous calendar month.

J.3.3.1.8 Emergency Communications

FERMCO will provide emergency services for this project. This includes trained Emergency Response Technicians (ERT), ambulance services and fire services. The services are to be used for fires, medical emergencies, and emergencies identified in the Health and Safety Plan (e.g., leaking cylinders).

A means to communicate any emergency condition must be available at all times during any work activity. This may be one of the following:

On-site work: Site telephone or cellular phone
2-way radio on FEMP channel
Site manual fire alarm pull station (when within 200 feet on the same elevation)

Cellular phones, if required, will be furnished by the subcontractor. Associated charges will be the responsibility of the subcontractor.

At least two two-way radios, Motorola MTX Series Model B7, shall be furnished by the subcontractor for this subcontract. One shall be used by the subcontractor's safety representative. The subcontractor is responsible for programming per FERMCO specifications by Mobilcomm, Cincinnati, Ohio (phone (513) 742-5555). The subcontractor shall be responsible for furnishing any other radios needed for the performance of their work. Frequencies other than the FERMCO frequencies are not permitted on site.

To report emergencies on site by phone, dial 648-6511 or by radio, switch to Channel 7 and call CONTROL. The number shall be posted at the work site.

J.3.3.1.9 Required Safety Meetings

Prior to starting work on the project, each project employee shall attend a pre-work safety meeting presented by the subcontractor to review the Project Specific Health and Safety Plan.

The subcontractor shall hold a tool box safety meeting on Monday of each week to emphasize safety and to discuss a subcontractor's developed safety topic related to the project. A record of attendance and topics covered shall be maintained by the subcontractor.

Subcontractor Supervision shall review work tasks with all subcontractor and lower tier subcontractor personnel performing the tasks, prior to start of shift, after lunch, and when new tasks are begun during the shift. The review shall address hazards, mitigators, reporting and controls listed in the Safe Work Plans and normal construction and operation hazards and related actions to perform work safely.

The subcontractor employees shall meet 30 minutes weekly, in conjunction with the weekly tool box meeting, to discuss safety issues relative to the subcontract work. The meeting will be facilitated by the subcontractor's safety representative. Topics shall be initiated by the employees. FERMCO will provide guidance on setting up the work groups during the initial sessions. Issues and concerns identified will be documented by the subcontractor's safety representative.

The subcontractor's safety representative shall participate in a monthly meeting chaired by FERMCO, with safety representatives from all subcontractors on site.

The subcontractor shall hold safety meetings in a quiet area conducive to active participation by employees.

J.3.3.1.10 Required Medical Monitoring

In accordance with 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, all personnel assigned to the project and performing actual tasks are required to participate in the FERMCO medical monitoring program.

Cost for FAT&LC personnel in the program will be covered by FERMCO.

Cost for all other personnel associated with the project will be three hundred and fifty dollars ($350.00) per person per annual physical. This includes medical cost associated with the annual physical, drug screen, random drug screen and any special medical monitoring required by OSHA standards (i.e. lead and asbestos).

If an outside medical resource is utilized to provide any portion of the monitoring program, the subcontractor must receive prior written authorization from the FERMCO. The FERMCO Subcontract Administrator will provide minimum requirements protocols for prospective subcontractors. Medical documentation showing that personnel meet minimum requirements shall be submitted in a sealed envelope marked "SENSITIVE" to the Medical Director, Mail Stop 30 with a copy of the transmittal to the FERMCO Subcontract Administrator. Submittals for conformance review, shall be submitted at least eight (8) working days prior to performing work. Approval must be received prior to performing work. FERMCO will provide a list of pre-approved outside medical resources upon request.

Cost for subcontractor personnel and for medical services performed by an outside medical resource will be borne by the subcontractor.

When an appointment is scheduled for medical monitoring by FERMCO Medical Services and the subcontractor or lower-tier subcontractor employee fails to report at the scheduled time without notification to Medical Services at least 24 hours prior to the appointment or notification of absence of the employee, FERMCO may deduct $350.00 from the subcontract amount for the cost of each re-scheduled appointment.

The subcontractor's medical monitoring program shall include the following medical examinations, at a minimum:

1. Documented Medical History (to include height, weight, and vital signs)
2. Physical examination
3. Laboratory Work-up - CBC, chemistry panel, urinalysis
4. Pulmonary Function
5. X-ray--Baseline and as physician orders - asbestos X-ray for asbestos workers
6. EKG--Baseline and once a year at age 50
7. Review and Evaluation of Examination by an occupational health professional
8. Vision test - to include distance, near, depth perception, color
9. Hearing test - audiometry

The subcontractor employees will be required to undergo medical examinations at the following times.

1. Pre-assignment (baseline)
2. Annual (within one year of previous physical)
3. After incidents, potential exposures, or physician recommendation
4. Exit (termination) if more than six months since the last exam or if the employee has had significant exposure since the last exam.

Special medical (health hazard) monitoring requirements as prescribed by 29 CFR 1926, Safety and Health Standards for Construction and/or 29 CFR 1910.120 (Standards for Hazardous Waste Operations), other Federal, State or local statutes; or specific site Health and Safety Plans, may be fulfilled by sources outside of FERMCO (e.g., lead and associated tests). Documentation including copies of medical examinations, laboratory or other testing including biologic monitoring shall be provided to the FERMCO Medical Director as described in above. Biologic monitoring requirements will be based upon the Subcontractor's Hazard Analysis and OSHA standards. Additional surveillance or monitoring requirements may be generated from the subcontractor's method of performing work or materials used.

The subcontractor is responsible for notifying employees that no food or drink may be consumed after midnight prior to scheduled medical pre-assignment monitoring. Any employee related costs caused by employees eating or drinking after midnight will be at the subcontractor's expense.

FERMCO Medical Services Department has the following Medical Monitoring Programs (including all of the laboratory, x-ray, and other testing ordinarily included in the Biologic Monitoring Program) in place for workers with potential exposures.

Asbestos Worker
Hazardous Waste Worker (including radiation)
Lead Worker (and other heavy metals)
Hearing Conservation

Some workers are required by regulation to be entered into a long-term Health Surveillance Process (Program), however, FERMCO cannot provide nor be responsible for these longer term programs for subcontractor employees. Other Standards of Care/Practice in Industrial Hygiene, Occupational Medicine, or Health Physics may also dictate special testing or programs for some workers. The subcontractor is responsible for these requirements.

The Subcontractor's Hazard Analysis shall contain information on project specific hazards to which workers may be exposed.

The subcontractor will be required to complete an access form for each subcontractor employee which will be used to identify the job classification (i.e., Operating Engineer, Laborer, Clerk) for the employee. FERMCO Medical will use this information to determine FERMCO provided monitoring requirements. The durations for physicals listed in J.3.3.3, Part 8C includes any medical time necessary for this monitoring.

The FERMCO Medical Director will be the final authority pertaining to fitness of any worker or suitability to perform work and be exposed to any of the various hazards at the FEMP.

Prescription Medicine

1. Non-prescription medicine may not be taken into Controlled Areas with the single exception of Glucose Tablets with may be taken by diabetics. it must be noted here that candy is not recognized by FERMCO as a medicine and shall not be taken into a Controlled Area.

2. Prescription medicine will only be recognized by FERMCO after the worker, to whom the medicine is prescribed, registers the medicine with FERMCO's medical Department. Workers that need Glucose Tablets must also register with FERMCO's Medical Department.

3. Workers that must take prescription medicine on a schedule should first try to coordinate their schedule so that they may take their medicine on the administrative (a.k.a., "clean" or non-process") side of the plant. If this is not possible, prescription medicine shall only be taken in a designated drinking water area or designated break room.

4. In the event of an emergency, when prescription medicine is needed right away, a worker may take the medicine on the spot, regardless of the area in which he or she is standing. The concern for human life comes before that of a possible contamination. It is stressed, however, that if medicine must be taken under these conditions, that the worker should contact a Radiological Control Technician (RCT) to determine what action, if any, will be required of the worker in regards to dosimetry (e.g., leaving a urine sample). there will be no administrative consequences for workers that become contaminated during the emergency self-administration of registered prescription medicine (or Glucose Tablets). The calling of and RCT is a safety precaution and is in the best interests of the worker.

Subcontractor employees receiving medical treatment with radiopharmaceuticals will be restricted from entering Controlled Areas until such time as the radiopharmaceutical has cleared sufficiently from his/her system to the point where frisking through a Personal Contamination Monitor (PCM) at the control point does not trigger the alarms. The subcontractor employees that are to receive such treatment shall report to FERMCO Medical Services beforehand so the appropriate precautions can be taken. Employees that have received treatment with radiopharmaceuticals shall report to Medical immediately upon returning to work.

Subcontractor employees that are pregnant may "Declare Pregnancy" in accordance with 10 CFR 835. The employee should report to FERMCO Medical, where she will be informed of risks related to her pregnancy as a result of working on the subcontract. If declared, FERMCO will ensure that the employee's thermoluminescent dosimeter (TLD) is read monthly (as opposed to quarterly). FERMCO's administration control limit is 50 mrem/month, or 400 mr/gestation period.

Bioassay

FERMCO will provide the DOELAP accredited dosimetry program. For additional information, refer to the WPRAP Radiological Safety Requirements, Attachment J.3.4.

The form titled "Required Urinalysis Sampling" (Figure J.3.3-2) shall be completed and submitted to FERMCO by 10:00 a.m. on the fifteenth (or closest working day) of each month for the preceding work period. This form shall be completed for the subcontractor and its lower-tier subcontractors. Required information shall be reported for all workers qualified under FERMCO Radiation II Training that have worked at the Project site during the reporting period.

All personnel qualified under FERMCO Radiation Worker II Training are required to leave a Bioassay (urine sample) after every sixty (60) day period and at the end of work on the subcontract. The information submitted above will allow FERMCO to generate Bioassay cards for all personnel reported. Bioassay cards will be provided to the subcontractor for distribution to all affected employees. Employees who will be leaving the job prior to the next sampling date are required to leave a sample after last work day in contamination area (before final departure).

All workers receiving a Bioassay card will be required to report to the Bioassay station in the S&H Building (Bldg. 53) by the date shown on the card. Failure to report to the Bioassay station within the required time period may result in the employee's badge being withheld and site access denied until the requirement is fulfilled.

It is the subcontractor's responsibility to confirm that it has received Bioassay cards for all affected employees. Missing cards must be reported immediately to the FERMCO Project representative responsible for the subcontract.

Baseline and incident fecal sampling shall be controlled and maintained by the FERMCO Dosimetry Program. Fecal sampling requires the use of a kit which the worker must pick up from the personnel at the in vivo chamber in the Health and Safety Building (Building 53). The worker is then required to bring the kit home and return it the next morning to the personnel at the in vivo chamber.

J.3.3.1.11 Natural Occurrence (Weather)

Weather affected work (e.g., excavation, work in outdoor open locations) will be stopped if lightning, heavy persistent rain, wind, or other adverse weather conditions are in the area. This includes any weather conditions whose impact is judged to be detrimental to safety by FERMCO. Any operations utilizing cranes, drill rigs or personnel working on elevated steel will be suspended if any wind velocity reaches 25 mph. Cost of work stoppage for adverse weather conditions shall be borne by the subcontractor.

J.3.3.1.12 Lead, Chromium or Cadmium Prohibitions

The use of solder or flux containing more than 0.2 percent lead or cadmium is prohibited.

Paints or other products containing lead or chromium are not permitted on site.

J.3.3.1.13 Reporting Injuries and Accidents

All injuries and illnesses, no matter how minor, resulting from work performed at the FEMP shall be reported to the FERMCO Medical facility when they occur. The employees supervisor shall accompany the employee.

FERMCO will charge the subcontractor for treatment of injuries (including FAT&LC personnel) associated with the project based on the following scale.

a. Treatment for less than or equal to 30 minutes--$100
b. Treatment for greater than 30 minutes up to 1 hour--$200
c. Treatment for greater than or equal to 1 hour--$400

The subcontractor's superintendent shall report all accidents and injuries to the FERMCO Project Contracts Manager when they occur. The subcontractor's Health and Safety Representative shall report all accidents and injuries to the FERMCO Health and Safety Officer when they occur.

In the event of a serious accident, injury, or event, the involved area shall not be disturbed until approved by FERMCO.

The subcontractor shall provide reports and support investigations into accidents, illnesses, and injuries as required by FERMCO.

Injuries are classified based on "Record keeping guidelines for occupational injuries and illnesses," US Dept. of Labor OMB No. 1220-0029.

Within 24 hours after an OSHA Recordable injury or illness, the Subcontractor Project Manager and Safety Representative shall meet with FERMCO's Project Manager and Manager of Safety & Health to fully explain what caused the event and what preventive measures will be taken to prevent a reoccurrence.

J.3.3.1.14 Back-up Alarms

All self-propelled equipment and vehicles shall be equipped with an automatic electronic audible reverse signal alarm.

J.3.3.1.15 Roll over Protection Exemption

Exemptions to roll over protection permitted by OSHA are <u>not</u> permitted.

J.3.3.1.16 Eye Protection

All eye protection shall comply with ANSI Z87.1. Rigid side shields are required with safety glasses. Safety glasses are a minimum requirement for entrance into any area associated with this project. FERMCO will supply eye protection for FAT&LC personnel.

J.3.3.1.17 Hard Hats

All hard hats shall be ANSI Z89.1 listed. Hard hats are to be worn at all times within defined construction areas and during the excavation phase. "Soft-cap" welding is not permitted in construction areas. Welding shields are to be affixed to hard hats. FERMCO will supply hard

hats for FAT&LC personnel. Additional hard hat requirements are located in WPRAP Radiological Safety Requirements, Attachment J.3.4.

J.3.3.1.18 Safety Shoes

All personnel shall wear ANSI Z41 listed boots when working in all areas associated with this project. FERMCO will supply safety shoes for FAT&LC personnel.

Where chemical resistant boots are required, they shall be ANSI Z41 listed or worn over boots being ANSI Z41 listed.

Additional requirements for boots is located in the WPRAP Radiological Safety Requirements, Attachment J.3.4.

J.3.3.1.19 Work Uniform

All personnel shall wear as a minimum, long pants and shirt with four (4) inch long sleeves in all work areas associated with this project.

J.3.3.1.20 Signs

The subcontractor shall supply and post appropriate signs stating "Construction Area - Hard Hats and Eye Protection Required" in proximity to the work and at all entry locations. Signs shall be placed approximately every 100 feet around the defined construction area.

For Operational Activities, the subcontractor shall supply signs, at all entry locations to the project, stating the project name, entrance requirements, names of the contacts (project manager and HSO), and where the Health and Safety Plan is located.

J.3.3.1.21 Portable Fire Extinguishers

The subcontractor shall provide FM Approved or UL Listed portable fire extinguisher(s) for all work, storage and trailer locations. Ordinary hazard areas shall require a 2A-20BC rated extinguisher within 50 feet of all work task area(s). NFPA 10 shall be followed for all fire extinguisher requirements. Inspections shall be in accordance with 29 CFR 1910 Subpart L and 29 CFR 1926 Subpart F.

J.3.3.1.22 Anti-Contamination Clothing (Anti-Cs)/Personnel Protective Clothing

All Anti-Cs and personal protective clothing (PPC) shall be supplied by the subcontractor, including those for the FAT&LC workforce identified in the Work Force Utilization Plan (see Section C.4.8) plus an additional 20 FERMCO personnel) and shall meet the requirements defined in Attachment J.3.4. Use of anti-C's and PPC shall meet the requirements listed in Attachment J.3.4. Disposable anti-Cs shall not be reused.

For the purpose of this contract, the terms Anti-C's and personnel protective clothing are used interchangeably.

A commitment made to the Department of Energy is that disposable particulate barrier anti-Cs shall NEVER be worn as a single layer of anti-Cs. In cases where one layer of particulate

disposable anti-Cs is required, launderable anti-Cs must be used. The subcontractor shall comply with this requirement.

Safe Work Plans or procedures are to dictate the various styles of protective dress one must wear to perform specific tasks. A choice between two alternatives may be given.

PPC selected for protection from chemical hazards shall provide at least 2 hour breakthrough protection.

J.3.3.1.23 Heavy Equipment Operator

The subcontractor shall maintain qualification records of all equipment operators on site for FERMCO review. Acceptable verifications can be from the equipment manufacturer, a certified trainer, the Operating Engineers Union, or the employer.

Prior to beginning work on site, the operator shall become familiar with the specific equipment to be operated by reviewing the manufacturer's operating manual and by physically operating the equipment. The subcontractor shall document this familiarization and retain a copy in the jobsite files.

J.3.3.1.24 Hoisting and Rigging

Hoisting and rigging shall comply with requirements of the Department of Energy Hoisting and Rigging Manual with the FERMCO Supplement. A requirement of the DOE Hoisting and Rigging Manual is that all lifts and use of rigging equipment require a hoisting and rigging plan.

The subcontractor shall maintain qualification records on site of all rigging personnel for FERMCO review. Journeymen riggers are required for all lifts, including material handling lifts. Heavy riggers are required for all critical lifts and for all lifts of unknown weight and/or center of gravity.

Operators of hoisting equipment (including cable, chokers, etc.) shall maintain a daily log. The log shall remain with the equipment at all times. All lifts are to be described in the log as required in the FEMP supplement to the DOE Hoisting and Rigging Manual Chapter 11. FERMCO will provide the log books. Log books are to be submitted to FERMCO Document Control at the completion of this subcontract or when equipment leaves the FEMP, whichever occurs first.

J.3.3.1.25 Aerial Lifts, Manlifts, Scissors Lifts, Etc.

Full body harness and lanyard shall be required while working from self propelled articulating extension boom lift. These devices shall not be used as a means of access and egress to other elevated work stations without written approval from FERMCO.

All material handling equipment and mobile powered personnel lifts shall have the factory approved operator/safety manual for use by the operator and personnel. This manual shall either be with the equipment at the time of use or be on file, available for reference when requested. The safety requirements within the manual shall be followed.

The subcontractor shall develop and retain, in jobsite file, documentation confirming that all subcontractor personnel operating aerial lifts, vehicular mounted elevating and rotating platforms, power platforms, etc., at the FEMP have been instructed on the safe operation of the equipment, and have demonstrated competency in the operation of the equipment. This documentation will identify the type of equipment, (brand, name, size, and/or model) to be used, personnel who have demonstrated competency in the use of each, date, and signature of responsible subcontractor.

The use of non-electrical powered lifts is not permitted in enclosed areas (buildings) unless carbon monoxide (CO) monitoring is conducted.

J.3.3.1.26 Seat Belts

Seat belts are required for all vehicle (including gas or electric powered carts) occupants. Occupants are required to use seat belts when vehicles are in operation.

J.3.3.1.27 Flammable/Combustible Liquids Use & Storage

The subcontractor shall follow the requirements of NFPA 30 - The Flammable & Combustible Liquids Code (the most recent edition), OSHA 29 CFR 1910.106 - Flammable & Combustible Liquids when utilizing or storing flammable or combustible liquids at the FEMP.

J.3.3.1.28 Ground Fault Circuit Interrupters

Ground Fault Circuit Interrupters (GFCI's) shall be furnished by the subcontractor on all 15 and 20 ampere, 120 volt circuits at all sites, unless specifically exempted by OSHA. The GFCI shall be placed at the source of the electrical service to protect both the cord and the devices connected. Assured grounding programs are not acceptable.

J.3.3.1.29 Flexible Cord Sets

Use of Flexible Cord Sets with repairs to the cord is not permitted. Cord sets are to be routed overhead where possible to avoid damage. All flexible cords shall be UL listed and rated for hard usage and damp locations. Only purchased cord assemblies will be permitted.

All cord and plug assembles must have molded ends to verify proper polarity.

J.3.3.1.30 FERMCO Permits

FERMCO Permits required for this subcontract are as follows:

A Excavation/Penetration Permit is required to delineate any unknown hazards or conditions before the penetration starts. A FERMCO Excavation/Penetration Permit with complete mapping/drawings of all hidden utilities or other hazards is required prior to start of excavation. The Project Manager and the Person In Charge (PIC) on the permit form shall ensure that any hazard is clearly marked and communicated to the workers involved. A FERMCO excavation permit is only required for excavations not covered by the subcontractor's Excavation Plan.

A Facility Outage Permit is required prior to the closing of any roadway, sidewalk, fire exit, electrical system, interruption of utility, telephone, fire protection system, or alarm system. The permit shall specify what will be impacted and what controls are required.

Information on Radiological Work Permits (RWP) is contained in Attachment J.3.4.

J.3.3.1.31 Trenching and Excavations

This section pertains to excavations not covered in the subcontractor's Excavation Plan.

The subcontractor will be responsible for performing excavations in accordance with OSHA 29 CFR 1926 Subpart P; Field slope stability determinations shall be made by an OSHA Trenching & Excavation Safety Competent Person as necessary within approved OSHA requirements.

Names and qualifications of Competent Person who will oversee the excavation shall be submitted to FERMCO. Soil must be assumed to be type "C" unless classified by a competent person. Soil within the FEMP fenced area shall be assumed to be disturbed.

Requirements of the Confined Space Program, shall apply to excavating four feet or more in depth.

All inspections shall be documented. At the end of the project, all inspection forms shall be submitted to FERMCO.

Competent person shall:

1. Determine protection systems for excavations up to 20 feet deep to protect employees from cave-ins. A registered professional engineer shall make all determinations at depths greater than twenty (20) feet.

2. Complete initial written inspection.

3. Perform soil classification as defined in 29 CFR 1926, Subpart P, Appendix A. A minimum of one Visual and one Manual classification test is required to determine soil type. The manual test shall be done with a pentrometer or shearvane.

4. Inspect the excavation and protection systems using written documentation:

   a) Daily, prior to work beginning and as conditions change.

   b) After every measurable rain or other hazard increasing occurrence (e.g., freezing and thawing conditions).

   c) After any other event that may affect stability of the excavation or protective system.

Unattended excavations shall be physically barricaded.

J.3.3.1.32 Safety Showers/Eyewashes

When required by OSHA, the Safe Work Plan, or product MSDS, a safety shower/eyewash shall be located within 100 feet of the hazard. All portable safety showers/eyewashes brought on-site must comply with ANSI Z 358.

J.3.3.1.33 Illumination

Walkways to and areas were personnel are working shall be lighted to not less than five (5) foot candles per ft^2. Any portable lighting shall be arranged so as not to create a personnel burn hazard.

J.3.3.1.34 Sanitation

All drinking water locations within a radiologically controlled area shall be approved by FERMCO Radiological Control and Industrial Hygiene prior to use.

Portable toilets shall not be used in Contamination Areas. No action may be taken in Contamination Areas which will expose any area of the workers' bodies or clothing, protected by anti-contamination clothing other than the act of doffing anti-Cs at the control point with the intention of leaving the Contamination Areas.

J.3.3.1.35 Temporary Enclosures

Temporary enclosures shall not be supported by automatic sprinkler piping or other fire protection equipment.

The enclosure supporting structure shall be constructed of noncombustible or approved fire retardant materials.

The coverings for walls, floors, ceilings shall be on noncombustible or approved fire retardant materials.

The enclosure and an area of 10 feet around the enclosure shall be posted as "no smoking" areas.

Combustible materials shall not be stored in the area surrounding temporary enclosures.

Combustible materials used within the operation of a temporary enclosure shall be removed immediately after use or transported to and stored in approved metal containers with self closing lids. All combustible waste shall be removed from the enclosure after each work shift.

Exits shall be kept unobstructed at all times.

Hot work shall not be permitted within an enclosure, without an approved Open Flame and Welding permit.

J.3.3.1.36 Housekeeping

Daily documented inspections shall be made by the subcontractor to ensure that housekeeping is maintained. Debris shall be removed as soon as possible or at the end of each shift.

Keep walking areas clear of hazards by: cleaning up spills, picking up waste material (rod ends, metal shavings), trash, and tools, running hoses and electrical cords overhead, and keeping stairways, emergency equipment and exits clear.

Dispose of trash, waste and scrap in correct containers.

Ensure that work tables are occupied only by work at hand and tools required for work being done.

Stack, store, or spot material so that it can be reached readily by workers and material-handling equipment.

J.3.3.1.37 Competent Person Inspection

Where OSHA or this subcontract requires inspections by a competent person, the inspections shall be documented by log or other means and maintained in a file in the subcontractor's facilities at the site.

J.3.3.1.38 Buddy System

As required in 29 CFR 1910.120, the buddy system shall be required for all work on this project.

J.3.3.1.39 Temporary Heating

The subcontractor shall provide 24 hour coverage where fuel heating systems are used.

J.3.3.2 <u>Requirements for the Subcontractor's Safety and Health (S&H) Program</u>

Within 15 calendar days after Notice To Proceed, the subcontractor shall submit an S&H program (for all requirements under Section J.3.3.2) for FERMCO conformance review addressing the following requirements:

J.3.3.2.1 Safety and Health Organization

J.3.3.2.1.1 Subcontractor Site Safety and Health Representative

J.3.3.2.1.1.1 Responsibilities

The subcontractor must designate a full time Site Safety and Health (S&H) representative dedicated to this subcontract with experience as defined below. The Safety representative will also work closely with FERMCO management in hazard recognition/prevention and ensuring prompt correction of safety deficiencies.

The subcontractor's Site S&H representative shall be a responsible member of the organization at the site whose duty shall be the prevention of injuries and/or accidents, conducting documented inspections of work and storage areas, reporting safety related information, and maintaining applicable job site safety records. The S&H representative must have no other responsibilities and be independent of the Project management group, i.e., not report functionally to the Project Manager (unless the Project Manager is also a principal in the company).

J.3.3.2.1.1.2 FERMCO Approval

The S&H representative must be approved by FERMCO before he/she is assigned to the project. FERMCO reserves the right to approve/disapprove any S&H representative which the subcontractor may submit either before the project begins or during project execution. During execution of the contract, FERMCO reserves the right to assess the S&H representative's work performance based on the number of first-aid cases, recordable injuries, lost time injuries, contamination incidents, safety violations and understanding and commitment to safety and require replacement when performance is unsatisfactory.

The S&H representative must meet the following criteria:

- 5 years verifiable applied safety and health experience, with 3 years of that time in the construction and/or waste remediation industry, as a full time safety professional.
- Must be able to demonstrate adequate safety knowledge of OSHA 1926 and 1910 standards.
- Must be able to explain how to effectively implement a safety program for this project.
- Must be able to explain how to manage injuries/illnesses as well as accident prevention.
- Must be able to keep documentation current and up to date as required by the terms and conditions of this subcontract as well as those requirements as identified by OSHA or other regulatory agencies.

Each work shift shall have a Safety and Health Representative. The subcontractor's Safety and Health representative for the second and third shift operations will be required to have:

- 3 years verifiable applied safety and health experience, with 3 years of that time in the construction and/or waste remediation industry, as a full time safety professional.
- Must be able to demonstrate adequate safety knowledge of OSHA 1926 and 1910 standards.

NOTE: This is the minimum criteria for the responsibilities of the S&H subcontractor S&H representative to meet at the time of pre-approval (pre-mobilization) by FERMCO. Any other requirements either contractually or required by OSHA and other regulatory agencies shall be

complied with. Failure to meet this requirement at the time of pre-mobilization may result in a default of this subcontract.

J.3.3.2.1.1.3 Requirements for Organization Section of Subcontractor's Program

The subcontractor's Safety and Health program shall:

- Identify the S&H representative.
- Describe the S&H representative's relationship to subcontractor management which shows independence.

J.3.3.2.1.2 Competent Persons

- Provide names and qualifications including certification of training, where required, of the following competent persons to be used on this subcontract:
- Fall Protection/Arrest Inspection and Training
- Lock and Tag Inspection
- Scaffold Inspection
- Ladder Inspection
- Excavation Inspection
- Crane Inspection
- Motorized Equipment Inspection
- Equipment Inspection
- Rigging and Hoisting Inspection, including slings, cables, and chokers

J.3.3.2.2 As part of the S&H Program the subcontractor shall provide the plan required, as defined in General Provision, Environment, Safety and Health (A.37).

J.3.3.2.3 As part of the S&H Program, the subcontractor shall provide the plan required, as defined in Special Requirement H.56 (Accident Prevention).

J.3.3.2.4 Hazard Communication Program

The subcontractor shall incorporate into its Health and Safety Program, a Written Hazard Communication Program shall be in compliance with 29 CFR 1910.1200, 29 CFR 1926.59 (e) and shall be available at the job site. The Written Hazard Communication Program shall include the following information:

- The methods used to ensure that each container of hazardous material at the job site is labeled, tagged or marked with the identity of the hazardous material and

the appropriate hazard warnings (what system will be used to label containers at the job site).

- The subcontractor shall identify in their written program where MSDS's will be maintained at the job site.

- The method used by the subcontractor to provide their employees with information and training on hazardous materials used at the job site.

J.3.3.2.5 Carcinogen Control

This section only applies to materials the subcontractor may bring to site. It does not apply to material currently on the FEMP property. The requirements of this section are not applicable to control of asbestos and radioactive materials.

The subcontractor shall submit as part of their S&H Program, a Carcinogen Control Plan. This program shall establish requirements for the identification, evaluation and control of occupational exposure to chemical carcinogens.

Carcinogenic materials are not to be used on-site until a technical/engineering evaluation has been performed and documented by the subcontractor which justifies that no feasible substitute is available.

J.3.3.2.5.1 Carcinogen Definition

Occupational carcinogens regulated by this program include:

- Those substances regulated as carcinogens by OSHA in 29 CFR 1926, Subpart D and 29 CFR 1926, Subpart Z.

- Those substances that have been evaluated by the International Agency for Research on Cancer (IARC) and found to be a carcinogen or potential carcinogen (i.e., Groups 1, 2A or 2B).

- Those substances listed by the U.S. National Toxicology Program (NTP) as known to be carcinogenic or reasonably anticipated to be carcinogenic.

- Those substances categorized as a confirmed human carcinogen or suspected human carcinogen (i.e., A1 or A2) by the American Conference of Governmental Industrial Hygienists (ACGIH).

The requirements of this program apply to all regulated occupational carcinogens when the carcinogen is present in its pure form or in concentrations of 0.1 percent or greater.

J.3.3.2.5.2 Carcinogen Controls

The following controls shall be implemented when it is necessary to use a regulated carcinogenic material:

- Safety plans, standard operating procedures or experimental protocols shall be written describing the use of the occupational carcinogens and the procedures used to control exposure. These documents shall be reviewed and approved by FERMCO Industrial Hygiene prior to use of the carcinogen. Plan submitted shall be made at least 15 calendar days prior to use.

- Regulated areas shall be established where carcinogens are used. Steps shall be taken to control access to a regulated area, and a record maintained of all personnel working in the regulated area.

- Warning signs indicating the presence of carcinogens shall be posted at the entrance to all regulated areas.

The following controls shall be implemented when it is necessary to use a regulated carcinogenic material:

- Engineering controls shall be the primary method used to minimize personnel exposure to carcinogens and to prevent the release of carcinogens into the work environment.

- Administrative and/or personal protective equipment controls shall be implemented to supplement engineering controls in order to minimize exposure to carcinogens.

J.3.3.2.6 Respirator Program

The subcontractor shall incorporate into his Health and Safety Program a Respirator Program that complies with the requirements of the OSHA Respiratory Protection Standard (29 CFR 1910.134). In addition, the program shall contain the following requirements; medical approval of personnel to wear respirators, training, quantitatively fit-tested and issuance of a respirator fit test card.

FERMCO will conduct the medical review, the training, the respirator fit test and issue a respirator fit test card for FAT&LC personnel only. The subcontractor is responsible for medical approval, training, quantitatively fit test and respirator fit test card for all other personnel.

FAT&LC personnel that have been trained, medically approved and fit-tested by FERMCO will be considered trained per the standard but will require orientation on the subcontractor's program.

FAT&LC personnel are fit tested for the respirators as follows.

- North Model 7700 Silicone Half-mask Air Purifying (Small, Medium, Large)
- MSA Comfo II Silicone Half Mask Air Purifying (Small, Medium, or Large)
- MSA Silicone Ultra Twin Full-Face (Small, Medium, or Large)
- MSA Silicone Ultra Vue Full-Face (Small, Medium, or Large)

MSA Optium Air A6 type PAPRs or equivalent are to be used.

All respirators and cartridges shall be supplied by the subcontractor. The subcontractor should plan on a clean respirator being worn each time personnel enter the work area when excavation, processing of waste and D&D activities are being conducted.

J.3.3.2.6.1 Chemical Contaminants

Respiratory protection is required whenever the likelihood of airborne concentrations of chemical hazards (1) exceed one half (1/2) the OSHA Permissible Exposure Limit (PEL) or ACGIH Threshold Limit Value (TLV), which ever is most restrictive; (2) exceed one half of any applicable short-term exposure limit; (3) as required by specific OSHA standards (e.g., asbestos, lead); (4) or as required by material safety data sheets (MSDSs) for materials used.

Unless specifically stated in OSHA requirements, the following requirements are to be complied with to upgrade or downgrade respiratory protection.

Respiratory equipment for chemical exposure concerns shall be upgraded any time air monitoring results exceed one half (1/2) of the PEL or TLV adjusted for the protection factor of the respiratory protection worn.

Respiratory equipment for chemical exposure concerns can be downgraded when personnel monitoring results are below one half (1/2) of the PEL or TLV adjusted for the protection factor of the respiratory protection worn. The personnel monitoring results shall be collected in a OSHA or NIOSH approved manner.

For chemical concerns, the protection factor of a full face air purifying respirator and powered air purifying respirators (PAPRs) is considered to be 100; that of airline respirators is considered to be 1000; and that of SCBAs to be 10,000.

J.3.3.2.6.2 Radiological Contaminants

If the fraction of the Derived Air Concentration (DAC) of any contaminant measured in the air at any job site multiplied by the number of hours per week a single worker will be in that area is greater than 4 DAC hours, respiratory protection will be required based upon the protection factor of the respirator needed to bring the airborne concentration inside the face piece down to a potential exposure of 4 DAC-hours per week. For the purposes of determining which type of respirator is needed for the job, the protection factor or a half-face respirator is considered to be 1, the protection factor of a full face air purifying respirator is considered to be 50; that of powered air purifying respirators (PAPRs) and airline respirators is considered to be 1000; and that of SCBAs to be 10,000.

Radioactive Contaminant	Class	DAC
U-238	Y	2E-11 microcuries/cc
Th-230	W	3E-12 microcuries/cc
Th-232	W	5E-13 microcuries/cc

J.3.3.2.7 Heat and Cold Stress

The subcontractor shall incorporate into its Health and Safety Program a heat and cold stress policy which shall meet or exceed provisions of The American Conference of Governmental Industrial Hygienists Threshold Limit Values (ACGIH TLV) booklet and FERMCO "Working in Hot Temperature" SPR 12-10.

The subcontractor shall use the following methods for compliance for heat stress:

- Conduct physically demanding work for June through August where protective clothing is required during off shifts.
- Conduct physiological monitoring in accordance with FERMCO SPR 12-10. A dedicated person is required to track exposure.

The subcontractor may use the following methods in conjunction with the required methods.

- Personal protective equipment (ice vest). The subcontractor must provide freezer and vests.
- Develop cool down rooms. These are areas inside of the work area that are environmentally controlled. The subcontractor is responsible for room construction including air conditioning units. Cool down rooms (workers not allowed to remove their respirators or receive physiological monitoring or get a drink of water) do NOT require any personnel radiological monitoring prior to entry. These rooms may be set up in order to allow the worker to rest briefly in an air-conditioned environment. Rests of this nature may not take any longer than 15 minutes out of any consecutive 60 minutes. Beyond this 15 minutes, workers must exit the Contamination Area in order to rest. Location of these areas must be approved by Radiological Engineering (FERMCO) based upon an evaluation of area dose rates.

The subcontractor can use the tables found in the latest addition of the ACGIH TLVs booklet or, SPR 12-9 Working in Cold Temperatures, for cold stress compliance.

The subcontractor shall have a log in/log out system during periods when work/rest schedules are used.

If the subcontractor chooses to use FERMCO SPR 12-9 or SPR 12-10 they shall notify FERMCO in writing that the subcontractor will comply with the SPR's.

J.3.3.2.8 Confined Space Program

Existing permit-required confined spaces located in the project work area are the utility manholes.

The subcontractor shall incorporate into his Health and Safety Program a confined space program that meets or exceeds 29 CFR 1910.146 and is based on the FERMCO Confined Space Program. FAT&LC and GCBCTC personnel that have received confined space training

through FERMCO shall be considered trained according to the standard but will require orientation on the subcontractor's program.

J.3.3.2.9 Ladders

The subcontractor shall incorporate into its Health and Safety Program a ladder inspection program. Ladders and ladder inspections shall be in accordance with 29 CFR 1910 Subpart D and 29 CFR 1926. Ladders shall be inspected at least quarterly. Ladders shall have a posting stating who inspected them and when inspection is due.

J.3.3.2.10 Fire Protection Program

The subcontractor shall incorporate into its Health and Safety Program a fire protection program in compliance with OSHA and FERMCO requirements. FERMCO requirements in addition to OSHA are as follows:

- All flame cutting, welding, open flames, grinding, brazing and other forms of hot work shall require a Flame and Welding Permit. The permit shall be updated for each shift.
- A continuous fire watch shall be required for a period of, at least, thirty (30) minutes after completion of any cutting, welding or burning operation.
- The fire watch shall be trained in use of the fire extinguishers (hands on) and the hazards relevant to the work performed.
- The fire watch shall have a fully charged portable fire extinguisher which is in addition to any extinguisher mounted in the facility.
- Personnel performing flame cutting, welding and burning including helpers when assisting and fire watch personnel shall wear fire retardant clothing. Additionally, leathers or similar protection shall be used any time that hot debris is likely to contact clothing. Fire retardant clothing shall not be considered protection from burning slag or other hot debris.
- Combustible materials and equipment that cannot be moved, building surfaces and openings in ducts, tanks or other confined spaces within 20 feet or below the work must be covered with fire resistant welding blankets.
- Flame cutting or welding on small tanks, piping or containers, which cannot be entered, require cleaning, purging and atmospheric testing before starting work.
- Oxygen-fuel gas systems shall be equipped with listed and approved back flow valves, and pressure-relief devices.

All high pressure cylinders shall be secured by a chain.

J.3.3.2.11 Lock and Tag (Energy Control)

The subcontractor shall comply with the FERMCO Lock and Tag procedure. FERMCO will provide training to FAT&LC and GCBCTC personnel.

J.3.3.2.12 Scaffold Tagging and Inspection Program

The subcontractor shall incorporate into its Health and Safety program a scaffold program that meets the requirements of 29 CFR 1910 Subpart D and 29 CFR 1926 Subpart L. The subcontractor's program shall also incorporate the following additional requirements:

- Competent person shall approve initial use and inspect scaffolding daily before use and following any occurrence that could affect structural integrity. Inspections shall be documented.
- Manufacturer's instructions for safe erection and use must be available for employee reference.
- Scaffolds over 50 feet high must be pre-approved by a registered professional engineer.
- A scaffold tagging program requiring the competent person to tag scaffolding that is complete prior to use. No untagged scaffolding shall be used.

J.3.3.2.13 Occupational Noise Exposure

The subcontractor shall incorporate into its Health and Safety Program a hearing conservation program for the subcontractor personnel. FERMCO will administer audiometric evaluation and tracking for the FAT&LC personnel.

The subcontractor shall institute feasible engineering or administrative controls when the noise exposure or noise dose of personnel is equal or greater than an 8-hour threshold limit value - time weighted average (TLV-TWA) of 85 decibels A-weighted (dBA). Engineering or administrative controls shall be designed to reduce exposures to the TLVs for noise as specified by in the most recent edition of the American Conference of Governmental Industrial Hygienists (ACGIH).

The subcontractor also will be required to provide and enforce appropriate personal protective equipment (hearing protection) when the noise exposure or noise dose of subcontractor personnel is equal or greater than 85 dBA for any duration of time.

J.3.3.2.14 Substance Abuse Program

J.3.3.2.14.1 All personnel working on the project will be in the FERMCO Substance Abuse Program in compliance with FERMCO's General Provision clauses entitled, Workplace Substance Abuse Program at DOE Sites, and FERMCO Substance Abuse Program. The subcontractor's Substance Abuse Program shall contain, at a minimum the elements shown in Figure J.3.3-3, Model Substance Abuse Program.

The subcontractor can choose to have initial drug screen of personnel associated with the project (except for FAT&LC personnel) conducted outside the FERMCO program. The subcontractor must use a SAHARM accredited lab and all results sent to the FERMCO Medical Review Officer. The subcontractor will be charged 15 dollars for each person it sends through the FERMCO initial drug screen program (except FATL&C personnel).

J.3.3.2.14.2 Figure J.3.3-3 may be completed, signed, accepted for use, and submitted by the subcontractor, or the subcontractor may submit another substance abuse program meeting the requirements.

J.3.3.2.14.3 Employee Education and Training (Figure J.3.3-4) is provided by FERMCO as part of General Employee Training (GET).

J.3.3.2.14.4 As a condition for work under this subcontract, subcontractor employees will be required to submit to drug and/or alcohol testing conducted by FERMCO. Substance abuse testing cannot be rescheduled once an individual has been notified.

J.3.3.2.14.5 Initial screening negative test results are reported to FERMCO within 48 hours following testing. Resolution of false positive tests, confirmation of positive tests including evaluation by FERMCO's Medical Review Officer requires up to 96 hours following testing. Holidays and weekends are not included in these durations.

J.3.3.2.14.6 Subcontractor employees whose badges have been terminated for less than 30 calendar days do not require re-testing for access. All other subcontractor employees shall be tested prior to access.

J.3.3.2.14.7 Subcontractor employees cannot perform work under the subcontract before receipt of negative drug and/or alcohol test results. Training, required medical, and In-Vivo examinations can be performed pending test results. In the event that the employee is denied access to the site, the subcontractor shall bear the cost of employee's time for training, etc.

J.3.3.2.14.8 Personnel determined by FERMCO to be in Testing Designated Positions are subject to random drug testing (Article 6, Section 5.0). Medical informs the employee's supervisor that his/her employee has been selected for random testing. The supervisor instructs the employee to report to Medical Services immediately.

J.3.3.2.14.9 Any employee testing positive for the use of illegal drugs or alcohol in excess of FERMCO limits and determined to be a substance abuser by the FERMCO Medical Review Officer, shall be denied access to the FEMP site.

J.3.3.2.14.10 Minimum sanctions to be taken by the subcontractor against employees who test positive for the use of illegal drugs or alcohol in excess of FERMCO limits shall include:

- Denial of site access, for persons seeking initial access, for one year. They must have fulfilled the EAP requirements after which they would again be required to pass access drug and/or alcohol testing and approved by the FERMCO Medical Review Officer.

- For first time positive random, suspicion, or occurrence test, denial of site access pending EAP recommendation, negative substance abuse testing and approval by the FERMCO Medical Review Officer.

- Employees reinstated under this provision shall be subject to unannounced substance abuse testing by recommendation of the MRO for at least one year following reinstatement.

- For a second positive substance abuse test, site access shall be denied permanently.

J.3.3.2.14.11 For reasonable suspicion or occurrence testing, in the event that a laboratory confirmed negative is not received within 48 hours from the time that tests are taken, the subcontractor employee will not be allowed to perform safety sensitive duties including but not limited to:

- Operation of motor vehicles and hazardous moving equipment of machinery including cranes and fork-lifts.

- Work at unprotected heights including ladders and scaffolds.

The employee cannot perform safety sensitive work until notified by FERMCO of a negative test result. A positive test result may result in denial of site access as described above.

J.3.3.2.14.12 Costs for employee time related to drug and/or alcohol testing including waiting periods for results and removal from safety sensitive work shall be borne by the subcontractor (except FAT&LC personnel).

J.3.3.2.14.13 Refer to the Project Labor Agreement Sections 13-11 & 14-3 for related provisions (Attachment J.4.8).

J.3.3.2.14.14 All work on this subcontract has been determined to be "testing designated." The subcontractor employees are subject to random testing.

J.3.3.2.14.15 Requirements for drug testing do not apply to visitors who are not performing work in safety sensitive functions. A visitor, for purposes of this program, is anyone requiring access to the FEMP for a period of fourteen (14) calendar days or less who is not performing safety-sensitive functions.

J.3.3.2.15 Fall Protection Program

In compliance with 29 CFR 1926 Subpart M, the subcontractor shall provide:

J.3.3.2.15.1 Fall protection required for a fall 6 foot or greater 29 CFR 1926.501.

J.3.3.2.15.2 Full protection plans described in 29 CFR 1926.502(k).

J.3.3.2.15.3 Training Program as described in 29 CFR 1926.503.

J.3.3.2.15.4 Fall protection shall include a full body harness. Belts may be used for positioning with fall protection provided by a separate full body harness with independent tie-off.

J.3.3.3 Site Access, Training and Medical Scheduling

J.3.3.3.1 General Training Requirements

J.3.3.3.1.1 To comply with 10 CFR 835, DOE Radiological Controls Manual and 29 CFR 1910.120, all personnel working or entering into a thorium contamination area on this project shall have the following FERMCO supplied training or equivalent listed in this section.

General Employee Training (GET)

Site Worker Training

Radiological Worker II (RWII) Training

Respirator Training and Fit Test (subcontractor supplied except for FAT&LC personnel)

Construction Rules and Regulations

J.3.3.3.1.2 The Subcontract Training and Medical Schedule and Locations (Figure J.3.3-4) gives durations, provider, schedule and location information for training courses and physicals. Where "Schedule" appears under "Time Provided" it means that training can be scheduled with the FERMCO on a first come first served basis.

J.3.3.3.1.3 The subcontractor is responsible for all cost (wages, fringes, etc.) of their personnel being trained. (Reference: Project Labor Agreement Article III, Section 3-3 which provides that the GCBCTC will bear the cost of Site Worker Training and Radiological Worker I or II training; Refresher and Radiological Re-Training shall be at the subcontractor's cost.)

J.3.3.3.1.4 The cost of trainers provided by FERMCO will be borne by FERMCO.

J.3.3.3.1.5 Equivalent Site Worker and Radiological Worker Training - Those individuals with documented proof of previous training, (i.e., Hazwoper

Training) which is equivalent to FERMCO Site Worker Training may receive exemption from Site Worker Training. In order to receive this exemption provide documented proof to FERMCO. Exemption may also be granted for Radiological Worker Training from other DOE Sites or from the GCBCTC by submitting documentation and successfully completing the FERMCO Radiological Worker Test and Practical. (Approximately 4 hrs.)

J.3.3.3.1.6 Personnel who were granted exemption to FERMCO Site Worker Training shall also complete the following: Construction Rules and Regulations (construction only), General Employee Training (GET), applicable Radiological Worker Training,(i.e., Radiological Worker I and II Training) and Supervised Field Experience on the FERMCO job site.

Certifications of training by a subcontractor trainer must be submitted to FERMCO for each employee. The submittal shall be made at least four (4) working days before site access is needed.

J.3.3.3.1.7 The subcontractor's superintendent is responsible for submitting an OSHA Supervised Field Experience form, signifying completion of Hazardous Waste Site Supervised Field Experience 29 CFR 1910.120, (24 hours of field experience) for each employee when General Employee Training (GET), Site Worker Training, and Radiological Worker II Training is required, to the FERMCO Subcontract Administrator.

J.3.3.3.1.8 Personnel who enter into areas controlled for potential asbestos exposure shall receive appropriate asbestos Operations and Maintenance (O&M) training. Asbestos O&M Training provided by training facilities in the past year will be accepted upon presentation of documentation demonstrating successful completion.

J.3.3.3.1.9 OSHA CONSTRUCTION SAFETY OUTREACH 30 HOUR program (IN ADDITION TO PROJECT SPECIFIC TRAINING SHOWN ON H&S REQUIREMENTS MATRIX) - All subcontractor and lower-tier subcontractor Field Supervision (Project Management, Superintendents, Construction Engineers, Construction Coordinators, Safety Personnel, or similar positions) shall take and successfully complete a certified OSHA CONSTRUCTION SAFETY OUTREACH 30 HOUR program course within 60 calendar days following Notice to Proceed (For construction activities only)

J.3.3.3.1.10 The subcontractor shall train employees to recognize and avoid fall hazards and in the use of control and fall arrest systems. Training shall be documented and retained in jobsite files.

J.3.3.3.1.11 Refresher Training

J.3.3.3.1.11.1 Required refresher training is listed in Figure J.3.3-4. It is the subcontractor's responsibility to coordinate scheduling of refresher training with FERMCO.

J.3.3.3.1.11.2 GET Refresher Supplemental Courses (see Required Additional Annual Training) - Required documentation from meetings and briefings shall be submitted by the subcontractor to the FERMCO Subcontract Administrator.

J.3.3.3.1.12 Computer Based Training (CBT)

Where indicated on Figure J.3.3-4, training or re-training is available on computers using interactive screens. Self study booklets are available to assist in preparation for CBT Training.

J.3.3.3.2 Access Requirements

J.3.3.3.2.1 General Access Requirements

J.3.3.3.2.1.1 At least 5 work days prior to subcontractor or GCBCTC personnel arriving at the work site, the subcontractor's superintendent should notify FERMCO that subcontractor personnel will require access. The Pre-Planning Request For Access form (Figure J.3.3-5) is used to make this notification. Names of subcontractor personnel are not required on this form.

This notification allows FERMCO to reserve training and as required medical times in advance.

Training and medical reservations are made on a "first come - first served" basis.

J.3.3.3.2.1.2 Before 9:00 AM of the day preceding when personnel will arrive, the subcontractor shall submit an Access Request form (Attachment J.4.23 to this subcontract) to FERMCO. This form requires the names of subcontractor personnel.

J.3.3.3.2.1.3 Subcontractor personnel shall arrive at the location identified by FERMCO to begin the access process by 6:30 AM.

J.3.3.3.2.1.4 Access Badges and TLD (if required) will be issued upon completion of access requirements as verified by FERMCO.

J.3.3.3.2.1.5 See Section J.3.3.2.14 for substance abuse testing requirements related to access.

J.3.3.3.2.1.6 Unless otherwise noted in the subcontract, escorted personnel may not perform physical work.

J.3.3.3.2.2 Requirements for First Time Access

- General Employee Training (GET), Site Worker Training and Radiological Worker II (RAD II) training and physicals, shall be taken and passed prior to being granted unescorted access to the work area. Construction Rules and Regulations also required for the Pre-operational, Decontamination and Dismantlement, and Site Restoration Phases.

- Other training such as Confined Space and Energy Control (Lock & Tag) are not access requirements. They are requirements for performing work tasks as indicated on the matrix.

J.3.3.3.2.3 Requirements for personnel who have had FEMP access previously.

Upon receipt of the Access Request form, FERMCO will review training and medical records to determine what additional training will be required.

The following guidelines will be used:

- In-Vivo testing will be required for Radiological II workers after an absence of 6 months from site or if the employee has worked at another facility since leaving the site.

- Medical testing will be required for Radiological II workers after an absence of 1 year from site.

- Medical history update will be required each time (approximately 1 hour.)

- Training will be in accordance with refresher requirements in Figure J.3.3-4.

FIGURE J.3.3-1

SUBCONTRACTOR MANPOWER REPORT

SUBCONTRACTOR:	MONTH ENDING:

WORK PACKAGE NUMBER AND DESCRIPTION:

SUBCONTRACTOR NAME	TOTAL WORKHOURS	INJURIES (List number of injuries and give a brief description.)

NOTE: INCLUDE ALL ON-SITE HOURS (CRAFTS, SUPERVISION, CLERICAL, ETC.)

(CE:022:02/07/94)

FIGURE J.3.3-2

REQUIRED URINALYSIS SAMPLING

SUBCONTRACTOR:	WEEK ENDING:
FERMCO CONTACT:	

Use a separate sheet for each sub-tier contractor and attach it to the General Subcontractor Sheet.

(CE:029:04/15/93)

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FIGURE J.3.3-3

MODEL SUBSTANCE ABUSE PROGRAM

1.0 POLICY

It is the policy of _____ that on contracts at Fernald Environmental Management Project (FEMP) including offsite locations, a DOE owned or controlled site:

1.1 The use, possession, sale, distribution, or manufacture of illegal drugs or alcohol at work or while on DOE property is prohibited.

1.2 Reporting to work while under the influence of intoxicants (including alcohol), narcotics, hallucinogens, depressants, stimulants, or other such drugs is also prohibited.

1.3 Any employee who violates this policy shall be subject to disciplinary action up to and including termination.

1.4 Any employee working at a DOE owned or controlled site shall receive notification that as a condition of employment under the contract the employee will abide by this policy.

2.0 EMPLOYEE EDUCATION AND TRAINING

2.1 Education and training programs will be presented to all employees which instruct the employee on the health aspect of substance abuse, safety, security and other workplace-related problems caused by substance abuse, provisions of DOE 10 CFR Part 707, and the employer's policy.

2.2 Managers and supervisors will receive additional training in the recognition of deteriorating job performance or judgement, or observation of unusual conduct which may be the result of possible illegal drug use, their responsibility to intervene, and the employer's policy.

3.0 EMPLOYEE ASSISTANCE

3.1 Employee assistance programs emphasizing preventative services, education, short term counseling, coordination and referral to outside agencies, and follow up shall be available to all on-site employees involved in the contract.

4.0 NOTIFICATION REQUIREMENTS

4.1 Any employee convicted under criminal drug statute for a violation occurring on a DOE owned or controlled site must notify FERMCO in writing within 10 days after such conviction. Failure to notify FERMCO of such a conviction is grounds for disciplinary action up to and including discharge. Within 10 days of receiving such notice FERMCO will notify DOE of the conviction.

FIGURE J.3.3-3 (Continued)

4.2 Within 30 days of receiving such a notice, appropriate personnel action must be taken against such an employee up to and including termination, or the employee, consistent with FERMCO's policy, may be offered the opportunity to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by Federal, State, or local health, law enforcement , or other appropriate agency.

4.3 If the employee does not participate in such a rehabilitation program, the contractor must take appropriate personnel action, up to and including termination, in accordance with FERMCO's policies.

5.0 TESTING DESIGNATED POSITIONS

5.1 Personnel determined by FERMCO to be in a Testing Designated Positions are subject to random drug testing. Testing Designated Positions are positions directly engaged in production, use, storage, transportation, or disposal of hazardous material sufficient to cause significant harm to the environment or to public health and safety.

6.0 CERTIFICATION

6.1 _____is committed to providing a safe workplace that is free from substance abuse by requiring that all employees be free of substance abuse of alcohol or drugs, while performing work at a DOE owned or operated facilities.

Name and signature of authorized person: (Print)_____

(Title)_____

(Signature)_____

(Date)_____

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FIGURE J.3.3-4

SUBCONTRACTOR TRAINING AND MEDICAL SCHEDULE LOCATIONS

TRAINING REQUIREMENT	DURATION HOURS	FREQUENCY	PROVIDED BY	TIME PROVIDED	LOCATION PROVIDED
CONST. RULES/REG.	2	one time	FERMCO	Mon. - Thur. @ 8:00 a.m.	FEMP
GENERAL EMPLOYEE TRAINING (GET) or GET/CBT COMPUTER BASED TRAINING	4	one time	FERMCO	GET - Mon. @ 11:30 a.m. GET/CBT - schedule Mon. - Fri.	FEMP
GET REFRESHER WITH SUPPLEMENT (CBT) (SEE REQUIRED ADDITIONAL ANNUAL TRAINING TABLE)	5	annually	FERMCO	Schedule	
SITE WORKER TRAINING	12	one time	FERMCO	Tue. - Wed. starting @ 7:00 a.m. *every other week*	FEMP
RADIOLOGICAL WORKER I (RAD I) or RAD I/CBT	8	one time	FERMCO	Schedule Thur. Mon. thru Fri. @ 7:00 a.m.	Alpha Building
RADIOLOGICAL WORKER I RETRAINING CBT	4	every two years	FERMCO	Schedule Mon. - Fri.	FEMP
RADIOLOGICAL WORKER I RETRAINING PRACTICAL	1	every two years	FERMCO	Schedule time Wed. only	Beta Building

FIGURE J.3.3-4 (Continued)

SUBCONTRACTOR TRAINING AND MEDICAL SCHEDULE LOCATIONS

TRAINING REQUIREMENT	DURATION HOURS	FREQUENCY	PROVIDED BY	TIME PROVIDED	LOCATION PROVIDED
CONST. RULES/REG.	2	one time	FERMCO	Mon. - Thur. @ 8:00 a.m.	FEMP
TO EXPEDITE ACCESS, INDIVIDUALS MUST BRING DOCUMENTED PROOF OF PREVIOUS TRAINING, MOST RECENT PHYSICAL EXAMINATIONS. MEETING OSHA REQUIREMENTS, PICTURE IDENTIFICATION, AND DOSIMETRY HISTORY.RADIO LOGICAL WORKER II (RAD II) or RAD II\CBT	20	one time	FERMCO	Schedule Thur.- Mon. starting @ 7:00 a.m.	Alpha Building
RADIOLOGICAL WORKER II RETRAINING CBT	6	every two years	FERMCO	Schedule Mon. - Fri.	FEMP
RADIOLOGICAL WORKER II RETRAINING PRACTICAL	2	every two years	FERMCO	Schedule time Wed. only	Beta Building
RESPIRATOR CBT NOTE:FOR RAD WORKER II	4	annually	FERMCO for FAT&LC personnel Subcontract or for other personnel	Schedule Mon. - Fri.	FEMP

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FIGURE J.3.3-4 (Continued)

SUBCONTRACTOR TRAINING AND MEDICAL SCHEDULE LOCATIONS

TRAINING REQUIREMENT	DURATION HOURS	FREQUENCY	PROVIDED BY	TIME PROVIDED	LOCATION PROVIDED
CONST. RULES/REG.	2	one time	FERMCO	Mon. - Thur. @ 8:00 a.m.	FEMP
RESPIRATOR FIT TESTING	1	annually for non-asbestos workers, every six months for asbestos, lead, and cadmium workers	FERMCO for FAT&LC personnel Subcontract or for other personnel	Schedule	FEMP
PHYSICALS	3	annually for Radiological Worker II	FERMCO for FAT&LC personnel Subcontract or for other personnel	Schedule	FEMP
IN-VIVO MONITORING **NOTE: Only for Radiological Worker II**	1	required prior to start work, annually, and exit	FERMCO	Schedule	FEMP
IN-VITRO NOTE: Only for Radiological Worker II	1	Submit sample to FERMCO Medical Every 60 days	FERMCO	ANY	FERMCO Medical
OSHA CONSTRUCTION OUTREACH	30	acquire 30 days after initial start day	FERMCO	Schedule	Alpha Building
29 CFR 1910.120 SUPERVISED FIELD EXPERIENCE ONE DAY (FOR RAD I)	8	one time	Sub.	Start after successful completion of initial training	conduct on the job site at the FEMP

FIGURE J.3.3-4 (Continued)

SUBCONTRACTOR TRAINING AND MEDICAL SCHEDULE LOCATIONS

TRAINING REQUIREMENT	DURATION HOURS	FREQUENCY	PROVIDED BY	TIME PROVIDED	LOCATION PROVIDED
CONST. RULES/REG.	2	one time	FERMCO	Mon. - Thur. @ 8:00 a.m.	FEMP
29 CFR 1910.120 SUPERVISED FIELD EXPERIENCE THREE DAY (FOR RAD II)	24	one time	Sub.	Start after successful completion of initial training	conduct on the job site at the FEMP
ASBESTOS O & M NOTE: Class III Worker not Removal	4	annually	FERMCO or Sub.	Schedule	FEMP
ASBESTOS CLASS IV	2	annually	FERMCO for FAT&LC personnel Subcontract or for other personnel	Schedule	FEMP
ENERGY CONTROL (LOCK AND TAG)	8	annually	FERMCO		
CONFINED SPACE	8	one time	Subcontract or		
NVO 325 INITIAL	8	one time	FERMCO	Schedule	FEMP
NVO 325 REFRESHER	2	annually	FERMCO	Schedule	FEMP

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FIGURE J.3.3-4

REQUIRED ADDITIONAL ANNUAL TRAINING

In addition to GET Refresher with supplement annual training each employee must complete 3 hours of training from the following list.

- Documented attendance for Pre-Work Safety Meeting (Section A 10.1)
- Documented attendance sheet weekly tool box safety meetings (Section A 10.2)
- Cumulated and documented time from daily briefings (Section A 10.3)
- Respirator Training (4 hours)
- Lock and Tag Training (8 hours)
- Confined Space Training (8 hours)

FIGURE J.3.3-5

PRE-PLANNING REQUEST FOR ACCESS

The purpose of this form is to provide early scheduling and expedite access to the FEMP for individuals whose identity is unknown and meet any of the following criteria: (1) Requires access to the FEMP 14 or more consecutive days; (2) is working under a contract that exceeds $25,000; (3) requires any of the medical or training requirements listed below.

For more information, please refer to Site Procedure SE-0001.

ORIGINATOR: (Printed) _____
(FERMCO CONTACT)

(Signature) _____ *Date:* _____

BADGE NO.: _____ PHONE NO.: _____ DIVISION: _____ DEPARTMENT: _____

EMPLOYER INFORMATION:	COMPANY NAME:	COMPANY TELEPHONE NO.: ( )
	COMPANY ADDRESS: STREET: CITY: STATE: ZIP CODE:	
	OCCUPATION:	COMPANY CONTACT:
DATE(S) ACCESS REQUIRED:	START DATE: ____/____/____ END DATE: ____/____/____	ON-SITE SUPERVISOR:

INDICATE NUMBER OF PERSONNEL REQUIRING THE FOLLOWING MEDICAL REQUIREMENTS

DRUG SCREEN _____ PHYSICAL EXAM _____

BASELINE PHYSICAL INCLUDING: _____LEAD WORKER _____ASBESTOS WORKER _____RESPIRATOR WEARER

INDICATE NUMBER OF PERSONNEL REQUIRING THE FOLLOWING TRAINING REQUIREMENTS

_____CONSTRUCTION RULES & REGULATIONS	_____ASBESTOS ABATEMENT PRACTICES (CONTRACTOR/SUPERVISOR)
_____GENERAL EMPLOYEE TRAINING (GET)	_____CONFINED SPACE
_____SITE WORKER (SWT)	_____K-65 WORKER
_____RADIOLOGICAL WORKER I (RAD I)	_____HAZARDOUS ENERGY & MATERIAL CONTROL (LOCK & TAG)
_____RADIOLOGICAL WORKER II (RAD II*)	_____LEAD WORKER
_____* BASELINE IN-VIVO	_____OSHA OUTREACH (____ 30 HR/____10 HR)
_____THORIUM WORKER	_____29CFR1910.120 SUPERVISOR TRAINING
_____RESPIRATOR	_____OTHER _____
_____ASBESTOS O & M	
_____ASBESTOS ABATEMENT WORKER	

HELPFUL GUIDANCE INFORMATION:

- PRINT LEGIBLY USING BLACK INK
- RECOMMEND SUBMITTAL OF FORM TO ACCESS ADMINISTRATION CENTER 10 DAYS IN ADVANCE IF POSSIBLE, BUT NO LATER THAN 5 DAYS PRIOR TO START OF WORK (FAX: 648-_____)
- FOR QUESTIONS, CONTACT ACCESS ADMINISTRATION CENTER AT 648-_____.
- INDIVIDUAL ACCESS REQUEST FORMS MUST BE FORWARDED TO ACCESS ADMINISTRATION CENTER AS SOON AS INDIVIDUAL INFORMATION IS RECEIVED.
- TO EXPEDITE ACCESS, INDIVIDUALS MUST BRING DOCUMENTED PROOF OF PREVIOUS TRAINING, MOST RECENT PHYSICAL EXAMINATIONS. MEETING OSHA REQUIREMENTS, PICTURE IDENTIFICATION, AND DOSIMETRY HISTORY.

ATTACHMENT J.3.4

WPRAP RADIOLOGICAL SAFETY REQUIREMENTS

J.3.4.1 Preliminary Information

J.3.4.1.1 Waste Pit Radiological Isotopes of Concern.

J.3.4.1.1.1 From the compiled list of isotopes within the waste pits (from RI and CIS studies), the most limiting isotope (for radiological contamination control purposes) is determined and applied as the isotope of concern. Establishing a radiological isotope of concern identifies what surface contamination and airborne radioactivity limits will be applied for activities within the associated area per FERMCO's IMPLEMENTATION PLAN AND RADIOLOGICAL PROTECTION PROGRAM FOR 10 CFR PART 835, "OCCUPATIONAL RADIATION PROTECTION." Thorium-230 has been identified as the isotope of concern for radiological control purposes in Waste Pits 1-5, the Burn Pit and the Clearwell, and Uranium-238 as the isotope of concern for Waste Pit 6 (reference Section J.3.4.3).

J.3.4.1.1.2 Once work begins on any waste pit OTHER THAN Waste Pit 6, all contamination areas associated with the waste pits will be controlled to thorium 230 limits. Until that time, work at Waste Pit 6 may be controlled to uranium 238 limits.

J.3.4.1.1.3 The subcontractor should assume that extensive dismantlement and an aggressive decontamination effort will be required to achieve unrestricted free-release of items which have come in contact with waste associated with this project. Based upon past experience using best available technologies, decontamination to free-release limits is difficult to achieve. Subcontractors are encouraged to evaluate (by cost-benefit analysis) whether those items which the subcontractor wants to free-release are worth the dismantlement and decontamination efforts required.

For personnel safety, waste minimization, and contamination control purposes, it is recommended that:

a. the subcontractor limit inspection tours of the work areas to times when no (or minimal) work activities are being performed; and

b. workers and other personnel minimize the amount/number of equipment and tools brought into thorium contamination areas to reduce the probability of losing an item that cannot be decontaminated to unrestricted release limits (reference Section J.3.4.3).

J.3.4.1.2 FERMCO-Provided Radiological Control Programs.

Radiological Control (FERMCO) will provide radiological control support, including providing Radiological Control Technicians (RCTs), radiological monitoring and record keeping. The subcontractor must comply with all radiological control requirements, directions, Radiation Work Permits (RWPs), Safe Work Plans,

training requirements, sampling, testing, oversight, etc. As part of this, FERMCO will provide the following:

- DOELAP accredited external dosimetry program (including record keeping and reporting);
- Internal Dosimetry program (including air sampling, bioassay, in vivo, analysis, and record keeping);
- Radiological Worker Training program consistent with the requirements of 10 CFR 835 and the DOE Radiological Controls Manual; and
- Radiological Control support personnel trained to the requirements of 10 CFR 835 and the DOE Radiological Controls Manual.

J.3.4.2 Pre-mobilization

J.3.4.2.1 ALARA Plans and Exposure Limits

J.3.4.2.1.1 An ALARA Design Review is required at the completion of Process Design (reference Section C.5.1.2 of this subcontract). The subcontractor must designate a point of contact and provide documentation on the ALARA Design Review for FERMCO technical review. The ALARA Design Review shall identify conditions on the project that require implementation of further engineering controls for controlling occupational exposure below the ALARA minimum design criteria of:

a. Exposure rates are <0.5 mrem in one hour on the average in areas of continuous occupancy (any one worker present 2,000 hours per year) and are ALARA.

b. If a worker's occupancy is less than 2,000 hours per year, the individual exposure rate which applies is <1000 mrem/yr to the whole body total effective dose equivalent (external plus internal doses) and ALARA.

c. Regarding the control of airborne radioactive material, the design objective shall be, under normal conditions, to avoid releases to the workplace atmosphere and in any situation, to control the inhalation of such material by workers to levels that are ALARA.

d. The design or modification of a facility and the selection of materials shall include features that facilitate operations, maintenance, decontamination, and dismantlement.

J.3.4.2.1.2 Brooms may not be used in Contamination Areas due to the potential for unnecessarily creating airborne radioactivity.

J.3.4.2.1.3 Within the work area, airborne radioactivity shall be controlled to 10% of the specific Derived Air Concentration (DAC) for the isotope-of-concern (reference

section on Radiological Limits, Airborne Radioactivity, below), taking into account the protection factor (PF) of the respirator worn by workers in the area (PF = 1000 for powered air-purifying respirator; PF = 50 for full-face air-purifying respirator; PF = 1 for no respirator or half-mask respirators). FERMCO-supplied/controlled air samplers will be used to collect airborne radioactivity data.

NOTE: The aforementioned examples of respiratory protection factors are not all-inclusive. If the subcontractor desires the use of other types of respirators on the job beyond those listed, the subcontractor shall contact FERMCO to determine the respiratory protection factor of that respirator (per FERMCO procedures).

J.3.4.2.1.4 If airborne radioactivity exceeds 10% of the appropriate DAC (given the appropriate respiratory protection factor), then, upon written notification by FERMCO, the subcontractor has one week to provide FERMCO with a written explanation of causes and corrective actions he will take to prevent the recurrence of the situation.

J.3.4.2.1.5 In all cases, the subcontractor shall control airborne emissions at the project boundaries such that 2% of the Derived Air Concentration for the appropriate radiological isotope-of-concern is not exceeded (based on a weekly average).

J.3.4.2.2 Radiological Material Inventory - the subcontractor must provide FERMCO with a list of all material and items to be brought on-site which have been used in conjunction with radioactivity in the past including such information as for what the items were used, when they were used, and the radioactive isotopes with which they were used. The subcontractor must provide this list prior to bringing these items to the site. FERMCO reserves the right to reject the subcontractor's request to bring such items on site.

J.3.4.2.3 Break Rooms -- General Requirements

J.3.4.2.3.1 The establishment of break rooms in radiologically controlled areas (where workers may drink beverages) must be approved by FERMCO Radiological Control. A breakroom in a radiologically controlled area is NOT guaranteed under the terms of this subcontract.

J.3.4.2.3.2 In approved break rooms (in radiologically controlled areas), workers may drink approved supplied beverages (in general: soda; water; coffee; and drink mixes). No eating or smoking or chewing is allowed in the break rooms (in radiologically controlled areas). A smoking area in a radiologically controlled area associated with this project is NOT guaranteed under the terms of this subcontract.

J.3.4.3 <u>Radiological Limits</u>

NOTE: Engineering controls to minimize personnel exposure, surface contamination, airborne radioactivity, and the amount of radioactive waste generated shall be incorporated into the project where practical.

J.3.4.3.1 Stop Work Authority

FERMCO RCTs and their supervisors, line supervision, and any worker through their supervision have the responsibility and authority to stop radiological work when radiological controls are inadequate.

There are rules, limits, and goals applied to this project. If a rule is violated, corrective actions must be taken to ensure that rule is not violated again or to change the rule if it is not deemed valid.

If a limit is exceeded, corrective actions must be taken to ensure that limit is not exceeded again or to evaluate whether the limit is too stringent and whether or not it may/should be adjusted.

Goals. It is FERMCO's intention that this subcontract be performed in an efficient and safe manner. Inclusive in this concept is the notion that work will be carried out following good radiological work practices. The list of these practices is infinite; most have to do with common sense ideas to prevent or minimize worker exposure or contamination or the spread of contamination. If any worker (including the RCTs, subcontractor personnel, FAT&LC workers, and FERMCO personnel) believes that good radiological work practices are not being carried out, it is that worker's responsibility to bring their concern to management (whether it be a RCT bringing his or her concern to the project coordinator for FERMCO or FERMCO bringing a concern to the subcontractor, etc.). If the worker is not satisfied that appropriate action has been taken after his or her concerns have been expressed, it is that worker's right and responsibility to exercise Stop Work Authority.

Similarly, if rules are continually broken or limits continually exceeded, there is a definite problem. To continue to work in the presence of this problem will be considered a poor radiological work practice. Management responses and the use of Stop Work Authority should take into account the potential consequences of the problem. Frequently, resolution may be made without stopping work or by only stopping a part of it. In this way, problems may be resolved without using Stop Work Authority or by using Stop Work Authority in a particular area.

In some cases, a worker is encouraged to exercise Stop Work Authority without first approaching management. These cases include situations in which a worker feels that there is imminent danger to the safety and health of a worker.

In any situation in which Stop Work Authority is used, the following requirements apply:

(a) Exercise stop work authority in a justifiable and responsible manner.

(b) Once work is stopped, do NOT resume until proper radiological controls have been established.

(c) Resumption of work requires approval of the responsible line manager and the FERMCO Radiological Control Manager.

J.3.4.3.2 Contamination Limits

The subcontractor should assume that extensive dismantlement and an aggressive decontamination effort will be required to achieve unrestricted free-release of items which have come in contact with waste associated with this project. Based upon past experience using best available technologies, decontamination to free-release limits is difficult to achieve. The subcontractor is encouraged to evaluate (by cost-benefit analysis) whether those items which the subcontractor wants to free-release are worth the dismantlement and decontamination efforts required.

It is the subcontractor's responsibility to evaluate tools and equipment for ease of dismantlement and decontamination prior to use on-site. If free-release of items is planned, appropriate precautions to prevent contamination should be implemented prior to and during use.

It is anticipated that all Contamination Areas associated with this project will be controlled against the limits described below for thorium. The only likelihood of a uranium Contamination Area arising would be if excavation was necessary for the construction of the remediation facility and removable contamination was found in the underlying soil. To address this possibility, limits defining uranium Contamination Areas and the like are included below.

J.3.4.3.2.1 Contamination areas will be established when the removable contamination (i.e., radioactive material that can be removed from surfaces by nondestructive means, such as casual contact, wiping, brushing, or washing) levels exceed the limits listed in Section J.3.4.3.2.5 for removable contamination. High Contamination Areas will be established when the contamination levels exceed 100 times the limits listed in Section J.3.4.3.2.5 for removable contamination. Fixed Contamination Areas will be established when the total contamination (fixed plus removable) levels exceed those listed in Section J.3.4.3.2.6.

J.3.4.3.2.2 Materials with removable contamination levels above the listed removable contamination limits must remain within a radiological contamination area or be decontaminated below the limits for unrestricted release from a contamination area.

J.3.4.3.2.3 Materials that are below the removable contamination limits but exceed the total contamination limits may be released from a contamination area and labelled as Radioactive Material for use in the controlled area. Equipment must be decontaminated to below the total contamination limits for unrestricted free-release prior to release from the controlled area unless release is to a licensed facility or owner that may legally accept the contaminated item. In this event, the item shall be wrapped to avoid spread of contamination on site, and handed over to the shipper or receiver for delivery in accordance with the receiving facility's license requirements and applicable U.S. Department of Transportation (DOT) regulations.

J.3.4.3.2.4 Prior to release from site, some items may need to be evaluated by a FERMCO Material Release Evaluator (MRE). The MRE evaluates the unrestricted release of material when any of the following conditions are encountered:

a. Material has the potential for contamination in areas which are inaccessible for proper survey.

b. Process knowledge is used to support the release decision.

c. Material has the potential of contamination beneath a coating applied while the material was in a controlled area.

d. Material has the potential for volume or in-depth radioactivity within the material matrix.

e. Special case items are being released such as radioactive consumer products, industrial sources, etc.

f. Material has detectable activity present but the activity is below the contamination limits listed in Sections J.3.4.3.2.5 and J.3.4.3.2.6.

For material with detectable contamination but less than the release limits of Sections J.3.4.3.2.5 and J.3.4.3.2.6, the MRE performs an evaluation to ensure that all reasonable attempts have been made to reduce the residual activity to as low as reasonably achievable prior to release.

The MRE evaluates and approves the restricted release of all material prior to exiting a controlled area of the FEMP to ensure the material is controlled or of such condition that no reasonable potential exist for the spread of contamination beyond the controlled area. The evaluator shall ensure that the Radiological Control Technician and the individual receiving the material understand all restrictions placed upon the restricted release.

Material that is in the original sealed manufacturer's packaging or material with internal surfaces sealed from the environment with no potential for contamination within the material internals may be released based on surface contamination monitoring techniques only. Material Release Evaluator concurrence is not required in this situation.

J.3.4.3.2.5 Removable contamination limits:

For unrestricted free-release of items from a Contaminated Area, the following loose contamination limits apply: 20 disintegrations per minute per 100 square centimeters of surface area (dpm/100cm^2) alpha contamination (for all materials exposed or potentially exposed to Th-230 contamination) and/or 1,000 dpm/100cm^2 alpha contamination (for all materials exposed or potentially exposed to uranium contamination).

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In order to survey for removable contamination limits as low as those for thorium 230, a low background alpha counter must be used to count disc smears. Devices that can do this on site (Tennelec instruments) generally take 2 - 5 minutes to count a single smear. Therefore, due to the time involved, it is essential that the subcontractor be able to inform the RCTs when items are to be removed from thorium contamination areas. The subcontractor must establish a staging area where items may sit while awaiting the results of smear surveys. This staging area must be large enough to accommodate the size and number of the items to be placed there awaiting removal. This staging area should have a surveyable floor (wooden pallets, sheet metal, etc.) in order to ensure items cannot become contaminated while sitting in it after decontamination. Furthermore, the staging area shall be surrounded with yellow snow fencing by the subcontractor. A comprehensive unrestricted release survey must be performed on all material prior to entry into the staging area.

Mixing of previously surveyed items and potentially contaminated material shall be avoided.

There may be more than one staging area (per the subcontractor's design). All staging areas must meet the requirements outlined above.

J.3.4.3.2.6 Total (fixed plus removable) contamination limits (for defining Fixed Contamination Areas and for determining whether an item may be released without restriction):

1500 dpm/100cm^2 (maximum per 100cm^2) and 500 dpm/100cm^2 (average per square meter) alpha contamination (for all materials exposed or potentially exposed to Th-230 contamination) and/or 15,000 dpm/100cm^2 (maximum per 100 cm^2) and 5,000 dpm/100cm^2 (average per square meter) alpha contamination (for all materials exposed or potentially exposed to uranium contamination).

J.3.4.3.2.7 Personnel Monitoring Limits

When personnel are surveyed upon leaving a contamination or controlled area, the following limits shall be applied:

a. for leaving a thorium-230 contamination area: 500 dpm/100cm^2 alpha.

b. for leaving a uranium contamination area or a controlled area: 5000 dpm/100cm^2 alpha.

If a personnel monitoring instrument alarms while a worker is monitoring out of a Contamination or Controlled Area, then, if it is determined that long-lived contamination (e.g., thorium or uranium) is on a worker's clothes or skin, the RCTs will begin the documentation of the incident and decontamination of the worker (with possible assistance from FERMCO Medical Department). (Reference Section J.3.4.6 (Radiological Incidents and Reporting For All Project Work), for follow up actions to a contamination incident.)

J.3.4.3.3 Airborne Radioactivity

J.3.4.3.3.1 Airborne Radioactivity Areas will be established around locations that exceed (or have the potential to exceed) a weekly average of 10 percent of the Derived Air Concentration (DAC) limits for the applicable isotope (listed in Sections J.3.4.3.3.2 through J.3.4.3.3.5). Engineering and/or administrative controls shall be implemented for these areas to control the impact on personnel and other project areas.

J.3.4.3.3.2 DAC for Th-230:

3.0E-12 microcuries per milliliter (uCi/ml) (applied when working with materials exposed or potentially exposed to Th-230 contamination)

J.3.4.3.3.3 DAC for Uranium:

2.0E-11 uCi/ml (applied when working with materials exposed or potentially exposed to uranium contamination)

J.3.4.3.3.4 DAC for Rn-222 (Radon):

0.333 WL (working levels) - one working level equals any combination of short lived radon daughters, in one liter of air without regard to the degree of equilibrium, that will result in the ultimate emission of 1.3E+05 MeV of alpha energy).

J.3.4.3.3.5 DAC for Rn-220 (Thoron):

1.0 WL

J.3.4.3.4 Radiation, Dose Limits, and Investigations

J.3.4.3.4.1 Radiation Areas will be established for any area accessible to individuals in which radiation levels could result in an individual receiving a deep dose equivalent in excess of 5.0 mrem in one hour at 30 cm from the source or from any surface that the radiation penetrates.

J.3.4.3.4.2 High radiation areas will be established for any area accessible to individuals in which radiation levels could result in an individual receiving a deep dose equivalent in excess of 100.0 mrem in one hour at 30 cm from the source or from any surface that the radiation penetrates.

J.3.4.3.4.3 FERMCO Radiological Dosimetry performs investigations of unplanned external exposure results when the following limits are exceeded:

a. 100 mrem to the whole body.

b. 1000 mrem to the skin, or extremities.

External exposure results are tallied every three months. If any of these levels are exceeded, the subcontractor shall be required to participate in an investigation into the cause of the exposure. Based on the outcome of the investigation, corrective actions may be required to reduce worker exposure to below these levels. It is understood that corrective actions shall be implemented in a timely fashion. The second time that external exposures brought about by the same cause are found to exceed the aforementioned levels, work shall be stopped until corrective actions are implemented by the subcontractor.

J.3.4.3.4.4 Additionally, FERMCO Radiological Dosimetry performs investigations when one of three things occur:

a. A worker's lapel air sampler records an exposure that could result in a 2 mrem total effective dose equivalent (TEDE) in a one week period taking into account the appropriate protection factor provided by respiratory protection. [A "DAC-hour" is the airborne radioactivity concentration expressed in the fraction/number of DACs times the time, in hours, of worker exposure]. Follow up to this includes:

1) The worker may be required to leave follow up urine and/or fecal bioassay samples (beyond routine and baseline bioassay requirements) to test for uptake by the worker. Depending on the exposure scenario, an in vivo examination may be required.

2) FERMCO Radiological Dosimetry performs a dose assessment.

b. Routine and/or incident urinalysis samples indicate worker has a concentration of uranium in his or her urine greater than 0.8 μg/liter. Follow up to this includes:

1) Interview with worker, co-worker, and a supervisor (up to two man-hours total per occurrence) to aid in determination of severity of uptake.

2) Worker leaves follow up urine sample (beyond routine and baseline bioassay requirements) to gain enough evidence to perform a dose assessment (typically minimum of two urine samples, one at the end of a shift and the other at the start of the next, but sometimes required daily until uranium is no longer detectable above background levels).

3) Possibility of worker being required to leave another fecal sample.

4) FERMCO Radiological Dosimetry performs dose assessment.

c. A dose assessment indicates worker has received 100 mrem or greater internally. Follow up to this includes a time-consuming field investigation by FERMCO to gather data/evidence for write-up. Worker may be restricted from entering the work area until further evaluation can be

made (i.e., follow-up bioassay (beyond routine and baseline bioassay requirements) and analysis). Work could be stopped in these cases if there is evidence of workplace conditions or procedures, etc. that may have caused the event. Work would then re-start after such condition is corrected per the terms described in Section J.3.4.2.1 (above).

J.3.4.3.4.5 Workers shall be restricted from working in radiologically controlled areas if total (external plus internal) exposures, in any one calendar year, exceed 1000 mrem TEDE.

The worker restriction shall last until the end of the calendar year in which the exposure was received.

An investigation shall be initiated by FERMCO when a worker reaches 80% of this limit. The investigation will determine whether the worker requires limitations to be placed on his or her job to ensure that the annual limit (1000 mrem TEDE) is not exceeded.

J.3.4.4 Mobilization and Project Work

NOTE: The subcontractor is required to provide the FERMCO RCTs with at least 24 hour notice, a description of projected activities (including movement of material and specific personnel activities), crew sizes, crew members, and crew locations. This information may be brought directly to the RCT office for the project.

J.3.4.4.1 Minimum Radiological Requirements for Personnel Access and Work Within a controlled area or other radiological area.

Subcontractor personnel to work within the project controlled areas or other radiological areas are to be trained radiological workers meeting requirements of 10 CFR 835 and DOE Radiological Controls Manual (existing approved FERMCO training programs available). Workers are to participate in FERMCO DOELAP accredited personnel dosimetry and bioassay program, and respiratory protection and medical requirements associated with the programs, (reference Attachment J.3.3).

For the purposes of this subcontract, "work" is described as any activity beyond standing and walking. Kneeling and sitting in a work area is considered work. Any area where work takes place and all pathways to and from these areas (regardless of the work activities taking place at the time or whether or not a person in these areas is performing work or non-work activities) shall be considered a "work area" and requires implementation of all work area requirements.

Project personnel radiological monitoring and surveillance requirements include:

J.3.4.4.1.1 All project personnel who perform work in a controlled area must participate in the following personnel monitoring and surveillance programs:

Thermoluminescent Dosimeter (TLD) (issued and maintained by FERMCO Dosimetry Section; issued to personnel and required to be worn at all times within a controlled area or Radiological Area). A list of personnel must be provided to FERMCO seven calendar days prior to the need for TLDs. For all new personnel to be arriving throughout the project, seven days advance notice (subcontractor to FERMCO) is required to acquire a TLD.

Baseline, incident, and termination urinalysis (controlled and maintained by FERMCO Dosimetry Section). From the project area to the Urine Sampling Station in the Health and Safety Building (Building 53), 20 minutes of travel time (each way) should be anticipated and five minutes to leave the sample.

J.3.4.4.1.2 All project personnel who perform work in a Radiological Area must participate in the following personnel monitoring and surveillance programs:

Thermoluminescent Dosimeter (TLD) (issued and maintained by site Dosimetry Section; issued to personnel and required to be worn at all times within a controlled area or Radiological Area). A list of personnel must be provided to FERMCO seven calendar days prior to the need for TLDs. For all new personnel to be arriving throughout the project, seven days advance notice (subcontractor to FERMCO) is required to acquire a TLD.

Baseline, routine (every 60 days), incident and termination urinalysis (controlled and maintained by FERMCO Dosimetry Section). Urinalyses should be left at the start of the shift on the date required (unless otherwise specified by FERMCO).

Baseline, annual, incident, and termination in-vivo (controlled and maintained by FERMCO Dosimetry Section). The in vivo counting chamber is in the Health and Safety Building (Building 53). A worker may have to wait up to 1/2 hour for their turn in the in vivo chamber. The in vivo itself lasts about 1/2 hour. In addition to that, the worker will have to change into FERMCO-provided scrubs in order to sit for in vivo, and change out of them when done. Total change, travel, and monitoring time, therefore, is about 1 1/2 hours. The subcontractor must notify FERMCO at least 7 calendar days in advance of the need for an in vivo exam.

Breathing Zone Monitoring Program: in thorium contamination areas, 100 percent of workers wear FERMCO supplied belt-mounted lapel personal air sampler pumps with tygon tubing that runs up to a filter cartridge (with filter) clipped on to the lapel (this is called a personal air sampler or PAS). In uranium contamination areas at least 25 percent of workers per work group/crew (minimum of 1 worker)) wear personal air samplers. All other workers in the work crew must be signed in on the paperwork under which their crew-partner received their personal air sampler. These are breathing zone monitors and are used as indicators of airborne radioactivity problems and potential worker inhalation exposure. The personal air samplers worn by one member of a crew samples the air in which all of the workers in a representative group are exposed. For this reason, crews that are assigned to work together must stay in approximation of each other while in the contamination area for which the breathing zone of the workers is being monitored. If this cannot be done, additional personal air samplers will be issued.

In the event of an anomaly (e.g., a failed respirator), all workers may be tracked back to a personal air sampler for data on airborne radioactivity levels in their work area.

In some areas, minimum of 25 percent of the workers will be required to wear a similar-style pump and filter assembly to monitor for radon and thoron. Typically, workers chosen to wear the radon/thoron pumps will wear the same pump for up to a month in order to gain the needed air sample size (controlled and maintained by FERMCO Radiological Control)

J.3.4.4.1.3 All project personnel who perform work in a Radiological Area controlled to thorium limits, must participate in the following personnel monitoring and surveillance programs (in addition to those listed above):

Baseline and incident fecal sampling (controlled and maintained by FERMCO Dosimetry Program). Fecal sampling requires the use of a kit which must be picked up from the personnel at the in vivo chamber in the Health and Safety Building (Building 53). The worker is then required to bring the kit home and return it the next morning to the personnel at the in vivo chamber. Less that 24 hours should pass between completing the fecal sampling kit and returning the kit to the personnel at the in vivo chamber.

J.3.4.4.2 Work Permits, Radiological Work Permits (RWPs) and Safe Work Plans

J.3.4.4.2.1 Upon receiving the Authorization to Mobilize, the subcontractor shall obtain the appropriate work permits to begin work. Work permits are necessary to describe intended work. As well, work permits are required in order to receive other permits necessary to perform work (e.g., radiological work permits or RWPs).

NOTE: work permits are only necessary for tasks for which Safe Work Plans have not been generated (reference section C.5.3).

J.3.4.4.2.2 Work permits are initiated by the facility owner (based upon discussion with the subcontractor regarding upcoming work). The permit-initiator fills out a FEMP work permit with the appropriate information such as job location and detailed job description. The description must be specific enough to allow the job to be evaluated by Radiological Control personnel so that they can assign proper controls for the job. When a job description is deemed too broad by FERMCO Radiological Control, the permit-initiator will be asked to fill out a new, more specific one. From this work permit, all necessary safety permits may be generated.

J.3.4.4.2.3 RWPs will be generated by FERMCO. One RWP will be generated for each Safe Work Plan and one for each Work Permit. Work may not begin until the appropriate RWP is in place. RWPs are required for certain activities at FEMP that include, but are not limited to:

a. Entry into High or Very High Radiation Areas.

b. Entry into High Contamination Areas.

c. Entry into Contamination Areas.

d. Entry into Airborne Radioactivity Areas.

e. Entry into Radiation Areas.

f. Maintenance work that would require breaking of any process line, tank, vessel, or enclosure containing radioactive material that may become loose or airborne during the work.

g. Any work within the controlled area or on contaminated or potentially contaminated equipment where safety precautions are not adequately discussed in technical work documents approved by Radiological Control.

h. Decontamination of highly contaminated equipment.

i. Digging or disturbing soil in a Soil Contamination Area.

j. Breaking the barrier of a Fixed Contamination Area.

For the purposes of this project, the RWP may refer directly back to a Safe Work Plan (generated by the subcontractor per section C.5.3 of this subcontract) for controls (engineering, administrative, and PPE) and all other radiological considerations. If the RWP was generated for a Work Permit, all radiological controls will be included in the RWP.

J.3.4.4.2.4 All workers must be briefed on the contents of each RWP or Safe Work Plan under which that worker will perform work. Workers must sign the acknowledgement sheet one time (per revision to the RWP or Safe Work Plan) to indicate an understanding of the requirements of that RWP or Safe Work Plan.

J.3.4.4.2.5 Workers will sign the RWP applicable to the work they are going to perform at the control point prior to entering the work areas, and will sign out upon exiting these areas. This signature acts as a sign-in sheet and is for tracking purposes.

J.3.4.4.2.6 The subcontractor is responsible to provide a permit board/posting area for items (e.g., General Work Permit, Radiological Work Permit, Health & Safety Plans).

J.3.4.4.2.7 A worker may only be signed in on one RWP at one time.

J.3.4.4.3 Radiological Area Control Points and Access Control

J.3.4.4.3.1 Workers are required to wear TLDs any time they are in controlled areas or other radiological areas. A permanent storage location shall be established and maintained by FERMCO Dosimetry where the workers will enter the work site from the non-controlled area. This location will have TLD storage racks in place and the workers will pick up their TLDs at this location prior to entering the

controlled area and return their TLDs to the rack upon exiting the controlled area. The FERMCO Dosimetry Section will control and maintain the TLDs and dosimetric records for all workers on the project.

J.3.4.4.3.2 When worn in conjunction with anti-contamination clothing, TLDs shall be worn inside the clothing if all of the worker's skin is covered (as when respirators are worn) and outside if any skin is left uncovered.

J.3.4.4.3.3 Remote Control Points

All control points/radiological area boundaries (with step-off pads) that are within the work area, beyond the control point trailers, shall be enclosed (shed, containment, etc.) to cover those necessary materials and equipment for monitoring of personnel, personal items, or equipment (when necessary), collection of any PPE that may be doffed at this point, etc.

J.3.4.4.4 Anti-contamination Clothing, Personal Protective Equipment, and Subcontractor-Issued Clothing

NOTE: For the purposes of waste-minimization, the subcontractor is encouraged to use launderable anti-contamination clothing as an inner layer of anti-Cs where double layers are required. However, double anti-Cs may be two layers of disposable anti-Cs.

J.3.4.4.4.1 No bagged anti-contamination clothing is allowed in breakrooms. The respirator cabinet may be in the breakroom for accessibility.

Anti-C clothing shall not be worn in Controlled Areas unless worker is donning anti-Cs for entry through a control point into Contamination or Airborne Radioactivity Areas.

J.3.4.4.4.2 After signing in on the appropriate RWP, the workers shall pick up the required respiratory protection (including the appropriate cartridges), log in badge number and respirator serial number on the control point access control (computer) logging system (this system will be supplied by FERMCO and a Radiological Control Technician will be present to help), then proceed to the changing areas to pick up and don the appropriate (i.e., as prescribed by the Safe Work Plans or RWPs) protective clothing to wear into the work areas. It takes less than two minutes per person to go through the control point access control (computer) logging system.

Each individual required to wear anti-C garments shall inspect them for tears, holes, split seams, missing buttons or zipper damage prior to use. Replace defective items with intact anti-C clothing.

J.3.4.4.4.3 Anti-Cs are regularly removed and discarded after one use (i.e., whenever a worker exits a contamination area). In the case of disposable anti-C's, they go

into the trash/waste stream; in the case of launderable anti-C's, they are segregated for return to the subcontractor's laundry services. Each individual required to wear anti-C garments shall don and doff these garments as taught in Radiological Worker Training. If anti-C coveralls are required, all interfaces or potential openings at the ankles, wrists, and (if a hood is required) the neck area, shall be covered, secured, or taped.

a. Clothing should be screened before it is laundered to segregate that which is damaged or requires disposal.

b. Contracting for fully licensed laundry services is encouraged.

c. Cleaned Personal Protective Equipment and laundered protective clothing shall be inspected prior to use. Clothing shall be free of tears, separated seams, deterioration and damage, or repaired in a manner that provides the original level of protection.

d. Laundered protective clothing shall be surveyed and shall meet the following criteria prior to reuse:

   1) Beta-gamma radioactivity less than 10,000 dpm/100cm^2

   2) Alpha radioactivity less than 1,000 dpm/100cm^2 for transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, and I-129, and 10,000 dpm/100cm^2 for uranium.

NOTE: The shipment of anti-Cs to and from a subcontracted laundry service falls under the requirements of Title 49 to the Code of Federal Regulations ("Transportation").

e. Subcontractor-issued non-personal protective clothing (i.e., clothing not considered PPE) shall only be laundered in washers (etc.) that are dedicated to the laundering of non-contaminated items.

f. The subcontractor shall maintain a set of hard hats designated to only be worn in contamination areas. Likewise, any protective clothing that goes on the outside of typical anti-Cs (i.e., doesn't come into contact with workers' skin or hair), like hip boots, is allowed and encouraged to be kept in the contamination area at the control point where workers enter and exit this area. These may be the last items the worker dons prior to going to work. The subcontractor is required to maintain the inside surfaces of these items below three times the loose contamination limits described in Section J.3.4.3.2.5, above. FERMCO Radiological Control will periodically check to ensure contamination does not reside on the inside surfaces of these items.

J.3.4.4.4.4 There are five types of anti-C garments that could be specified for likely work conditions at the FEMP. They are as follows:

a. **Lightweight, disposable:** barrier to particulates (radiological and other), asbestos, and lead. This is a breathable type garment which aids in the evaporation of perspiration. Lightweight disposables **shall not be worn as an outer layer** for protection from liquids or chemical hazards, or when wet conditions can be expected.

b. **Waterproof, disposable:** used as a barrier for casual or indiscriminate contact with water or liquids (i.e., mist from spray, wet surfaces, dew, etc.). The waterproof coverall has design specifications for breathability which allows minimization of heat stress concerns when waterproof protection is required. This waterproof coverall shall not be used when repeated or prolonged contact with water is expected. Disposable "rain suits" and Saranex aprons are other types of waterproof disposables that will be required for specific situations requiring proximity protection.

c. **Chemical protective, disposable or reusable:** used as barrier to liquids, particulates, and specified chemicals. This type of anti-C shall be used for extremely wet conditions when repeated or prolonged contact with liquids can be expected, for protection from specified chemicals, and for specific cases when a durable outer layer of protection is necessary.

NOTE: Radio belts or other objects worn on the outside of Saranex coated Tyvek chemical protective coveralls can degrade or "strip" the Saranex coating from the Tyvek base. This could result in a personnel contamination incident if an individual has repeated or prolonged contact with radioactively contaminated liquids, or it could result in exposures to certain chemical hazards. Care shall be taken to avoid these situations. This shall be done by placing radio belts (or other) as to avoid direct friction with the Saranex coating. If the object can be worn on the inside of the garment, this would be preferred. If it cannot, a method to consider is the placement of a barrier (duct tape or other appropriate material) between the object and the outer surface of the Saranex garment.

NOTE: Rubber shoe covers worn directly over Saranex booties has had the same effect. RWPs and Safe Work Plans must account for this whenever Saranex coveralls are required and contact with liquids in the foot area is possible. One acceptable method is to wear waterproof booties (PVC, other polymerized or rubber, or 200 Denier coated nylons) under the attached Saranex bootie; the Saranex bootie would then be covered with a rubber shoe cover. This will

prevent the foot area from getting contaminated if the Tyvek base is exposed.

d. **Fire retardant, launderable or disposable:** used as protection when performing "hot work". The launderable types are normally constructed of Nomex (or other materials approved by FERMCO Fire Protection Engineering). Select disposables for "hot work" will be approved on a case-by -case basis by FERMCO. Inner waterproof or chemical protective may be required on a case-by-case basis when other workplace hazards are present.

e. **Other launderable types:** used as a barrier to particulate forms of radiological contamination. Constructed with cotton, cotton/polyester blends, or nylon fabrics. Depending on the garment type, it may be a durable rubberized material. Cotton, cotton/polyester-blend, or nylon fabric types shall not be used as an outer or single layer of protection from liquids or chemical hazards, or when wet conditions can be expected. Cotton, cotton/polyester-blend, or nylon fabric types shall not be worn as a single layer of protection for heavy work activities which require repeated, prolonged, or continuous contact with contaminated surfaces.

J.3.4.4.4.5 **Gloves:** The specified glove types for radiological work are nitrile or neoprene. Cotton inserts can be worn with these glove types, but for comfort purposes only. Other types of gloves may be specified by Industrial Hygiene for physical hand protection and for protection from specified chemicals. All gloves used in Contamination Areas must be disposed of in appropriate waste containers and shall not be permitted to leave areas posted for contamination.

J.3.4.4.4.6 A typical set of full anti-Cs consists of coveralls, gloves, booties, rubber overshoes, and a hood or skullcap. Additional anti-C requirements (extra set of gloves, booties, etc.) may be required for certain situations; these requirements will be specified on the PPE page of the FERMCO Work Permit or in the subcontractor's Safe Work Plan.

J.3.4.4.4.7 Final anti-C requirements for a particular job or task will be determined in the Work Permits or Safe Work Plan process. Limiting radiological conditions will be placed in the Work Permits or Safe Work Plan for the anti-C requirements that have been specified. Anti-C requirements shall be determined by existing conditions and scope of work.

J.3.4.4.4.8 Contamination and Airborne Radioactivity Areas

a. With the exception of rubber shoe covers and launderable welder coveralls, launderable anti-Cs shall not be worn as outer layer of protection in Contamination, High Contamination, or Airborne

Radioactivity Areas that are controlled for isotopes other than uranium (i.e., thorium, radium, or other).

b. Rubber overshoes: RCTs providing coverage to project areas that are controlled for isotopes other than uranium (i.e., thorium, radium, or other) should survey these for release from those areas. Otherwise discard as low level radioactive waste unless alternative methods of reuse are approved by FERMCO Radiological Engineering.

c. Launderable welder (fire retardant) anti-Cs: When these garments are worn as an outer layer of protection in areas that are controlled for isotopes other than uranium (i.e., thorium, radium, or other) they shall be surveyed for free release from those areas. The RCT performing this survey should a use tape press on items found to be contaminated, but only if the contamination is dry and the surface area contaminated makes this a feasible option. If this not effective in removing the contamination, discard the garment as radioactive waste.

d. "Hot Work" Activities:

1) Any individual performing welding or burning activities ("hot work") in Contamination, High Contamination, or Airborne Radioactivity Areas is required to wear the orange flame retardant coveralls. This color designation has been approved for flame retardant anti-C garments only.

2) Orange welder coveralls shall be worn in areas controlled for contamination or airborne radioactivity and are not permitted for use in any other area. Green is the color designation for welder coveralls when anti-contamination clothing is not required.

3) When double sets of anti-C clothing are required, welder coveralls will serve as the outer layer of protection. Any other type of anti-C protection can be worn under the welder coveralls.

4) Consult FERMCO Radiological Engineering and Fire Safety for each case involving hot work. Additional protective garments will be required, depending on the situation at hand, and these shall be specified on the FERMCO Work Permit or the subcontractor's Safe Work Plan.

e. Special Considerations:

1) The wearing of knee high overboots or waders should be considered for muddy, contaminated areas or contaminated areas where liquids have accumulated. Appropriate doffing and reuse

requirements for these garments must be established on a case-by-case basis.

2) For IV.D.8.e.1 (above), disposable PVC or rubberized booties which extend above the ankles may be appropriate. This shall be evaluated on a case-by-case basis under the FERMCO Work Permit System or the subcontractor's Safe Work Plan.

3) A face shield and waterproof hood is required when a reasonable potential exists for liquids to splash in the facial and head area. If a full-face respirator is being worn, the face shield is not required.

4) Chemical protective ("Saranex") anti-C clothing is required if a potential exists for contact with contaminated grease, oil or other similar types of surface contamination.

5) Chemical protective ("Saranex") type anti-Cs are required for radiological/chemical hazards such as uranyl nitrate, thorium nitrate, or other corrosive or acidic materials.

6) Chemical protective ("Saranex") type anti-Cs are also required as an outer layer **when more than casual or indiscriminate contact with** radiological liquids is likely. Examples: Continuous exposure to pressurized wash overspray or when in direct path of a continuous stream of liquid.

7) When double anti-Cs are required and water-proof (or Saranex type) anti-Cs are necessary for a particular job, any type of anti-C garment can be worn as the inner layer of protection.

8) Work permits requiring double anti-Cs, that are in effect for dates May 15 through September 21 (summer heat season), shall require waterproof anti-Cs as the outermost layer of protection when the nature of the work and area conditions exhibit the potential for perspiration and subsequent degradation of particulate barrier types. If a chemical hazard is present, then the outer layer will be specified by FERMCO Industrial Hygiene.

9) In areas where separate men and women change facilities exist, the PPE page of the work permit or the subcontractor's Safe Work Plan shall specify "When launderable anti-Cs are worn as the first layer, only underwear shall be worn under this garment to minimize heat stress potential." In areas where adequate change facilities are not provided, the utilization of modesty clothing will be considered. The allowance for underwear be worn under disposables will be evaluated on a case-by-case basis under the FERMCO Work Permit system.

10) If perspiration is noted to be penetrating the outermost layer of anti-Cs and there is an indication that the protective properties of the garment are deficient for the nature of the work being performed, affected individuals shall proceed to the control point to doff all layers of their anti-C clothing, monitor, and exit the affected area. The individual can re-enter the area after putting on a new set(s) of anti-Cs.

11) The use of disposable "particulate only" (paper) anti-C coveralls (as a single layer of protection) will not be allowed unless specifically approved by FERMCO Radiological Engineering.

12) Gloves that are specified for physical hand protection from sharp or rough work surfaces or are specified when abrasion resistance is needed, shall be worn in addition to the specified layers of anti-contamination hand protection.

13) Areas located below unprotected (or open) overhead work must be posted with barrier rope or tape and appropriate restrictions must be placed on personnel access. A hard hat and the same level of anti-C protection (as workers above) is required.

14) Any work which requires close proximity to overhead structures or has the potential to create falling debris will require a hood in place of a skullcap.

15) Cold weather gear (coats, jackets, etc.) must be worn <u>under</u> anti-C clothing, unless the gear is an approved anti-C garment.

16) Cotton glove liners may be worn inside standard gloves for comfort, but shall not be worn alone or considered as a layer of protection.

17) Lessons learned from of a particular job or work evolution may be indicative of anti-C failure. If this is the case, consideration of more durable anti-Cs or other engineering controls shall be made by the subcontractor.

18) Hard hats may be worn either over or under anti-C hoods. The decision to wear the hard hat over or under the hood shall be made by considering these two situations:

    a) If wearing the hard hat under the hood interferes with the seal of respiratory protection or interferes with the ability to cover/seal the interface of the hood to the respiratory protection facepiece, the hard hat shall be worn over the hood.

b) A hard hat can be worn under an anti-C hood only if it is treated like a personal garment and surveyed for unrestricted free release each time the individual doffs for exit from an area. That means that the hard hat must be completely covered by the hood and the hood interfaces are appropriately secured.

19) If a hard hat storage area has not been established within a posted radiologically controlled area, hard hats shall be doffed (at the control point step-off pad) by individuals exiting these areas. The individual shall turn the hard hat over to an RCT for survey and release.

20) Storage of hard hats in posted Contamination Areas is allowed if the hard hat is worn over the hood. The hard hats shall be periodically monitored by the project/area coverage technicians.

21) Personal head gear (i.e., scarfs, kerchiefs, baseball caps, etc.) must be maintained so that no part of the head gear comes in contact with the exterior surfaces of anti-contamination clothing.

NOTE: When a hood or skullcap is required, the affected piece of personal head gear must be completely covered.

22) Personal head gear that cannot be covered by an anti-C hood or skullcap shall be removed prior to entering a Contamination or Airborne Radioactivity Area.

23) Long hair which extends below the collar of anti-C clothing shall be maintained or covered by anti-C protection.

J.3.4.4.4.9 Reconditioned (i.e., washed or laundered) respirators must meet the following criteria prior to being reused:

a. Frisking results show less than (<) 1000 disintegrations per minute per 100 square centimeters (dpm/100cm^2) beta-gamma.

b. Smears show < 20 dpm/100cm^2 alpha.

c. Smears show < 100 dpm/100cm^2 beta-gamma.

J.3.4.4.5 Outside of taking emergency action, no action may be taken in contamination areas which will expose any area of a worker's body or clothing, protected by anti-contamination clothing or other personal protective equipment other than the act of doffing anti-Cs at the control point with the intention of leaving the contamination areas. The only other exception to this is the removal of

respirators in a Heat Stress Control Room set up in a contamination area (uranium contamination areas only).

J.3.4.4.6 Work area boundaries

The subcontractor shall establish the project boundaries as defined and required by the design drawings and install boundary fence (orange snow fence or chain link fence as required by Section C.5.2.2.5). The subcontractor shall submit the proposed radiological boundaries for review by FERMCO.

J.3.4.4.6.1 The subcontractor is to install yellow snow fence (reference section C.5.2.2.5) to outline the radiological work areas. Fencing must be maintained. The fenceline must surround all contamination areas and areas with the potential to be contamination areas. At a minimum, this shall include all open excavations and all stockpiles, areas inhabited by used/contaminated excavation equipment and any area inhabited by any equipment which has come into contact with contaminated material, paths-of-travel of excavation equipment and/or excavated material, any work area which contains excavated material, and all pathways by which workers travel to and from the work site. In locations where yellow snow fencing does NOT mimic the proposed work area boundary, orange snow fencing or chain link fencing will be used for the boundary; otherwise, yellow snow fencing can serve the dual purpose of defining the contamination areas and boundaries. In situations where chain-link fence and yellow snow fence requirements overlap, the chain-link fence is required and will be posted by FERMCO RCTs. Yellow snow fencing shall not be used to define the boundary between a Controlled Area and an uncontrolled area.

J.3.4.4.6.2 At the time when any physical boundary, which served as a boundary to a contamination area, is removed, it must be replaced with the yellow snow fence.

J.3.4.4.6.3 All areas encompassed within the yellow fenced boundary will be considered a radiological contamination area and will be posted (yellow-and-magenta or yellow-and-black signs indicating such things as the isotope of concern, whether an RWP is required to enter, etc.) by FERMCO Radiological Control. The radiological access control point will be located at the boundary of the area and will serve as the normal access/egress point to the contamination area.

J.3.4.4.6.4 For outdoor work, High Contamination Areas within contamination areas, must also be defined by yellow snow fencing. FERMCO RCTs will be responsible for the signs which label the areas. The subcontractor shall be responsible for the fencing itself. The subcontractor may elect to have areas defined above the necessary level (e.g., as a High Contamination Area when only a contamination area is required) in order to improve logistics on the project.

J.3.4.4.6.5 Any boundary which separates contamination areas of differing isotopes (e.g., a uranium contamination area and a thorium contamination area) must also be separated by yellow fencing. Survey requirements and anti-contamination

clothing changes (e.g., removal of an outer set of anti-Cs when going from the thorium area to the uranium area) will be required.

J.3.4.5 De-Mobilization

The subcontractor should assume that extensive dismantlement and an aggressive decontamination effort will be required to achieve unrestricted free-release of items which have come in contact with waste associated with this project. Based upon past experience using best available technologies, decontamination to free-release limits is difficult to achieve. Subcontractors are encouraged to evaluate (by cost-benefit analysis) whether those items which the subcontractor wants to free-release are worth the dismantlement and decontamination efforts required.

J.3.4.5.1 The release of equipment, materials, and office and storage trailers

J.3.4.5.1.1 At the close of the project, all equipment, tools, vehicles, buildings, etc. in the thorium contamination area will be suspected of being contaminated with thorium. Items to be disposed of as waste may be handled per the specifications (Section C.5.1.2.2) of this subcontract.

J.3.4.5.1.2 The subcontractor is to provide at least 48 hours prior written notice to FERMCO of intent to remove equipment and/or materials from site.

J.3.4.5.2 Removal of Equipment and/or Materials From Site

J.3.4.5.2.1 Items to be released for uncontrolled use must be decontaminated by the subcontractor and have no inaccessible surfaces that may be contaminated. This may require dismantlement of some items. Dismantlement shall be taken as far as necessary to ensure all potentially contaminated surfaces are exposed for survey. In many instances, this will lead to total disassembly of some items. On vehicles, inaccessible areas-of-concern include (but are not limited to) brake systems and air filters. Rubber (e.g., tires) tends to absorb contaminants making unrestricted free-release of most rubber impossible. After survey out of the thorium contamination area, items will require survey out of the controlled area to be taken off site. Items for free release which have suspect (i.e., suspected to be contaminated) inaccessible surfaces, may only be released from the site with a signature from a FERMCO Material Release Evaluator (MRE).

J.3.4.5.2.2 The subcontractor is to provide support personnel to dismantle materials/equipment and decontaminate, as necessary, and allow a minimum of 1/2 hour for FERMCO RCTs to perform radiological unrestricted release surveys of materials and equipment. As material and equipment. To perform all of the necessary surveys, a complete free-release survey of an item with no inaccessible surfaces, the size of most pick-up trucks, would take 8 man-hours. If disassembly is required, survey time may be increased due to increased surface area in need of survey.

J.3.4.5.2.3 If the subcontractor has a license to receive radioactive material, items that are contaminated may be released if they are properly packaged/wrapped/sealed to prevent the spread of contamination on site and meet regulatory requirements regarding the shipping of radioactive material.

J.3.4.5.2.4 Items which cannot be released and/or will not be shipped off-site to the subcontractor, may be disposed of as radioactive waste at the subcontractor's cost.

J.3.4.6 Radiological Incidents and Reporting For All Project Work

J.3.4.6.1 Radiological Incidents

The subcontractor is to perform necessary actions to maintain occupational exposures below those limits presented in this subcontract (internal and external exposures) and is to practice ALARA at all times. The subcontractor is to maintain airborne emissions and contamination levels within the limits required in this subcontract with the proper use of engineering and administrative controls. Air emissions and contamination levels will be measured by FERMCO and reported to the subcontractor. All radiological incidents shall be reported to FERMCO Radiological Control. Examples of incidents include, but are not limited to skin or clothing (non-PPE) contamination, situations where radioactive material uptake is suspected, and situations where contamination is spread to a controlled area or clean area.

FERMCO is considered a DOE Price-Anderson indemnified contractor, and all subcontractors working for FERMCO are subject to laws related to DOE Price-Anderson indemnified contractors spelled out in Title 10 of the Code of Federal Regulations, Part 820 (10 CFR 820: "Procedural Rules for DOE Nuclear Activities").

J.3.4.6.2 Reporting and Classification

J.3.4.6.2.1 Pursuant to various requirements set forth in DOE Orders, Notices, and Regulations and those listed in FERMCO Manuals, Policies, and Procedures, it is the responsibility of all site personnel to report any abnormal event (procedure violation, personal contamination, explosion, etc.), condition, occurrence, accident, illness, or emergency to their supervisor. It is the responsibility of the supervisor to report the event to the Assistant Emergency Duty Officer (AEDO) or to the Communication Center as soon as possible. The supervisor is also required to make a daily log entry about the event or condition. This entry should include enough information to reconstruct the event and its associated consequences and corrective and recovery actions plus the estimated dollar amounts of damage to property or cost of the corrective actions taken. A copy of this entry shall be forwarded to FERMCO within 24 hours.

J.3.4.6.2.2 Once an event has been reported to the AEDO, the AEDO and the Emergency duty Officer (EDO) will categorize the event in accordance with DOE Order 232.1, OCCURRENCE REPORTING AND PROCESSING OF OPERATIONS INFORMATION. In the case of a Off-Normal event or higher, a critique of the event must be conducted within 3 working hours. The supervisor of the area is responsible for ensuring that all applicable workers attend the critique. In some cases, critiques may be conducted for events categorized at a reporting level below Off-Normal status, at the discretion of the AEDO and/or the EDO.

J.3.4.6.2.3 Based on the facts of the event determined at the critique, the Occurrence Reporting Team will prepare and submit to DOE (within 6 working hours of categorization of the event) a Fact Sheet for accuracy before submittal to DOE. The ORT will then prepare and submit a Notification Report for the event on the Occurrence Reporting and Processing System (ORPS). This is a computerized database of all events throughout the DOE complex and is based in Idaho.

J.3.4.6.2.4 The Project Team responsible for follow-up actions related to the event will then be assigned responsibility for closing out the Occurrence Report. This will include entries in the report describing a root cause determination, corrective actions, evaluations as to the significance of the event, and lessons learned. These items must be submitted to the ORT for formatting purposes within 35 calendar days after the categorization of the event.

J.3.4.6.3 Radiological Deficiency Reporting and Related Disciplinary Action Process

J.3.4.6.3.1 A Radiological Deficiency Report (RDR) shall be written (by FERMCO) to document radiological deficiencies, including, but not limited to the following:

a. radiation exposure exceeding site administrative levels;

b. unplanned exposures to airborne radioactivity or high radiation fields;

c. violation of posted requirements;

d. improper or unauthorized use of protective clothing or equipment;

e. inadequate radiological monitoring when going from an area of higher radiological control to an area of lower radiological control;

f. eating, drinking, smoking, or chewing in prohibited areas;

g. deviation from procedures which could result in increased exposure to radiation or the spread of radioactive contamination;

h. improperly controlled radioactive materials in non-radiologically controlled areas; or

i. observation of poor performance of accepted health physics practices.

J.3.4.6.3.2 The supervisor responsible for correcting deficiencies or the supervisor of the responsible individual (whichever applies) shall, within three working days of receipt of the RDR (with Severity Level filled in), complete the written response section of the RDR (Section 3), summarizing action(s) taken and/or planned and forward the RDR to FERMCO for inclusion in, and closing out of, the original RDR file.

J.3.4.6.3.3 The disciplinary action applied, guided by the Severity Level assigned on the RDR, shall be consistent with the FERMCO Rules of Conduct (reference FERMCO HR Procedure No. 145 Employee Discipline Attachment J.4.24 to this subcontract) and coordinated through FERMCO Industrial Relations.

Appendix to WPRAP Project Radiological Requirements

A. For the purposes of describing this project and the recommended radiological precautions, the various stages may be thought of as follows:

I. Construction of the remediation facility

It is the recommendation of FERMCO Radiological Engineering that stage I (Construction of the remediation facility) be performed prior to establishment of radiological boundaries, though concurrent establishment of the work area boundaries may be done. Most of the Stage I work would require minimal radiological oversight. Excavation activities associated with the construction of the remediation facility shall receive continuous coverage by a FERMCO RCT to identify contamination that may be encountered below the surface. If contamination is found in the controlled area during excavation, yellow snow fencing shall be used to define a contamination area around the excavation site until the contaminated soil is removed or the excavation backfilled and until such time as it can be confirmed that no removable contamination remains. Upgrade of PPE requirements may be required as coordinated with FERMCO Radiological Control.

II. Determining and defining the work area and radiological boundaries

This work is partially described in the body of the Attachment J.3.4- WPRAP Radiological Safety Requirements.

Currently, some contamination areas are already defined around some of the areas in the Waste Pit Area. Waste Pits 1, 2, 3, 4, the Clearwell, and the Burn Pit are all part of one contamination area (controlled to thorium 230 limits). Waste Pits 5, and 6 are identified as two separate contamination areas. Waste Pit 5 is controlled to thorium 230 limits, while Waste Pit 6 is controlled to uranium 238 limits.

Once work begins on any waste pit OTHER THAN Waste Pit 6, all contamination areas associated with the waste pits will be controlled to thorium 230 limits. Until that time, work at Waste Pit 6 may be controlled to uranium 238 limits.

III. Excavation of the waste pits

Workers outside of any vehicles that are equipped with HEPA-filtered supplied air shall be required to wear powered air purifying respirators (PAPRs) when within a thorium contamination area. This requirement shall apply to all stages of this project.

If engineering controls successfully maintain airborne radioactivity below limits prescribed in this plan, FERMCO may ease or lift respiratory requirements. Ventilation, dust-suppression, and the use of containments are encouraged on this project.

Once contaminated with thorium 230, decontamination and free-release (i.e., survey of items to show that contamination limits, described above, are not exceeded) of any items becomes

very difficult. When maintenance of any thorium 230-contaminated equipment becomes necessary, one of two methods to provide that maintenance is recommended:

a. while still in the thorium contamination area, have workers remove only that part of the equipment or vehicle, etc. that requires the maintenance and concentrate on decontaminating that piece only. Once free-releasable, the item may be serviced in any clean location; or

b. train a service technician up to the appropriate level in order for the technician to be able to enter the thorium contamination area with a respirator, and perform maintenance activities directly on the item. Note: visible, removable contamination (mud, soil/dirt, oil, etc.) shall be removed from work surfaces by the subcontractor prior to the start of work by the service technicians.

IV. Operation of the remediation facility:

a. Bulk material, stockpiles, dryer, and shredder

Anywhere that waste pit material exists, systems and/or operations shall be maintained, designed and/or controlled to mitigate dust generation.

b. Railcar loading and delivery to FERMCO

The subcontractor shall ensure that rail cars that have been surveyed do not/can not become re-contaminated prior to turn over to FERMCO. In addition, the subcontractor shall take precautions against adding loose contamination to the exterior surface of a rail car during the loading process and all processes of operation. This is to ensure that minimal decontamination efforts are necessary to release the car to FERMCO. Without this, dismantlement of the wheels or other parts of the rail car may need to be performed to ensure contamination does not exceed limits. Engineering controls that describe this should be in the subcontractor's rail car loading procedures.

The subcontractor shall allow for a minimum of three (3) hours for FERMCO to survey for loose contamination on the outside of a rail car.

The subcontractor shall be required to continue to decontaminate the exterior surface of the sealed/filled rail cars until contamination levels (both loose and total) are below those described in 49 CFR 173.44 which are as follows:

The level of non-fixed (i.e., removable) radioactive contamination on the external surfaces of each package offered for transport must be kept as low as reasonably achievable. The level of non-fixed radioactive contamination may not exceed 2.2 dpm/cm^2. NOTE: the units for this limit are dpm/cm^2. This is different than the limits described for every other contamination limit in this package.

B. Typical method for going to the work area

Workers desiring entry into a controlled area shall pass through a control point. All entries into the controlled area must be through a control point. The workers must take whatever route is available to them to pass the rack on which their thermoluminescent dosimeter (TLD) is stored PRIOR to their reaching the controlled area. Workers' TLDs have their badge numbers printed on them. TLDs must be worn while the worker is in the controlled area and must be stored on the storage rack assigned to them when he or she is not. TLDs shall be worn on the outside of the worker's clothing (non-PPE), facing forward, between their waist and shoulders.

At the control point, workers will "badge in" by sliding their badge through a bar code reader (or directly typing their barcode number into the computer). The computer contains information regarding the training and bioassay status of the workers.

If a worker's training is insufficient to allow them into the controlled area (either because training has never been given or because it is out of date) or bioassay requirements have not been fulfilled, the computer will signal the worker that he or she may not continue. At this point, the worker must contact the Radiological Control Technician at the control point for further action.

When the worker has successfully badged in through the control point, he or she then heads towards the job site.

To enter the project breakroom or the project locker rooms (if coming from a radiologically controlled area), all workers must pass through a check point. At this checkpoint, workers must use a hand-held frisker to monitor any hand-held items they are bringing past this point (method of frisking described in Radiological Worker Training), then must themselves step into the hand-and-foot monitor to check for contamination that could have been picked up in the controlled area, and (if the worker can pass these two frisking requirements) step across the line into the break room or the locker room. If either the hand-held frisker or the hand-and-foot monitor alarm, the worker is to notify a RCT to assist (RCTs will survey any suspected contaminated area and label and/or report contamination found per site procedures).

At this point, workers will sign the appropriate RWP for entry into the work area, collect necessary respiratory protection, badge in their badge number and respirator serial number into the control point computer logging system, show evidence of being properly respirator fit (to the control point RCT), go to the dressing area, and don the necessary protective clothing.

NOTE: FERMCO supplies tags for all respirators. Tags will have bar codes on them. The subcontractor must inform FERMCO of all newly-arriving respirators so that FERMCO may tag them. Workers shall not use respirators that are not tagged.

If a worker's training is insufficient to allow them into the work area (usually because training hasn't been received by the worker or training is out of date), the computer will signal the worker that he or she may not continue. At this point, the worker must contact a Radiological Control Technician for further action.

Prior to entering the work area, workers must contact a Radiological Control Technician for assignment of a lapel air sampler and testing of the airflow of powered air purifying respirators (if worn). This takes less than 2 minutes per worker.

When workers are signed in on an RWP, badged in to the work area, dressed appropriately, and checked out by a RCT, they may then enter the work area. Entry into a contamination area from the locker-rooms/change-out trailers must be through a control point.

In the work area, workers will follow work plans, Safe Work Plans, and Health and Safety Plans written by the subcontractor and commented upon by FERMCO, all permits, and all requirements in this subcontract.

Workers, even in double anti-Cs, will occasionally need to change their protective clothing to continue working. FERMCO RCTs will monitor workers for signs of anti-C deterioration (tears, oil stains, accumulation of dirt/contamination, sweat-through, etc.) and may, from time to time, survey such areas and determine whether to send a worker out of the work area to change protective clothing. Sometimes the reasons are straightforward (for example, workers must always leave the work area and doff anti-contamination clothing at the appropriate control point whenever their protective clothing is compromised or when, for example, NON-water resistant anti-Cs get wet or workers sweat through their protective clothing), but sometimes, it is based on contamination levels detected on the outside of the workers protective clothing. If contamination, as detected by a RCT, on the outside of a worker's work gloves is found to be greater than 30,000 dpm/100cm^2 beta-gamma or 600 dpm/100cm^2 alpha, the worker must change their work gloves. If this level of contamination is found on the outside of a single-layer of anti-contamination clothing, workers must return to the control point to change their protective clothing.

Whenever a worker is sent out of the area to change, for whatever reason, workers doff all anti-Cs at the control point, monitor through the PCM, and (unless the worker is going on break) follow the steps outlined above for preparing to enter the work area, and return to work.

For many tasks, workers will be in double anti-Cs, even in (uranium) contamination areas. Examples of this include work in High Contamination Areas, Asbestos Areas within Contamination Areas, and hands-on work in contamination areas where removable contamination exceeds 30 times the removable contamination limit required to define that area (where uranium is the radionuclide of concern). Double anti-Cs shall always be worn in thorium contamination areas. Workers in these areas may be required to doff their outer set of anti-Cs at strategically determined points prior to returning to the change-out trailers/control point. Radiological trash bags will be provided for the collection of these clothes.

Alpha friskers for foot monitoring will need to be used in conjunction with the alpha monitoring PCMs due to the length of time a PCM scan can take and the difficulty in lowering the minimum detectable activity (without increasing the number of spurious alarms) when the foot probes on the PCM are operable. For these reasons, it may take up to 2 minutes (per person) for personnel to monitor out of a thorium contamination area. If the PCM and/or the foot friskers alarm, the workers shall stay behind the line at the control point area and contact

a Radiological Control Technician for follow up action (survey, reporting, and possible decontamination).

Personal items may be surveyed out by the workers themselves, using FERMCO-provided friskers at the control point, unless work has been in a thorium contamination area. If the friskers alarm, the worker shall contact a Radiological Control Technician for follow up action (survey and possible decontamination).

Tools, lapel air samplers, personal items used in a thorium contamination area, and equipment may only be surveyed out of a contamination area by a Radiological Control Technician. Workers requiring items of this nature to be removed from the contamination area must give the RCTs notice of such a need at least one full work shift in advance of that need.

After exiting the contamination area, in order to gain access to the clean area of the site (i.e., in order to exit the controlled area), workers must monitor through the PCMs at the control point between the controlled area and the clean area. If the PCM alarms, the worker shall stay behind the line at the control point area and contact a Radiological Control Technician for follow up action (survey, reporting, and possible decontamination).

After successfully monitoring through the PCM , workers shall then place their TLD in the appropriate slot of the TLD storage rack (slots are labeled with badge numbers).

ATTACHMENT J.3.5

QUALITY ASSURANCE REQUIREMENTS

The Waste Pits Remedial Action Project has been determined to be an "Other Industrial Facility" by the project Safety Assessment (see Attachment J.3.2). The designation "Other Industrial Facility" as defined by DOE-EM-STD-5502-94 (Hazard Baseline Documentation) and FERMCO document NS-0003, (Safety Assessment, Hazard Screening and Classification) Rev. 0, 2-28-95 corresponds to the classification of Standard Industrial Facility by FERMCO Requirements Manual RM-0012 (Quality Assurance Program). This designation places the project in the Standard Industrial Hazards category for Quality Assurance (QA) purposes. The subcontractor is responsible to design, construct and operate the facility in such a way that this project remains a Standard Industrial Hazard. As previously discussed within the subcontract, the subcontractor is responsible for ensuring that their operations maintain the status of the facility as a Standard Industrial Hazard. Should their operations cause the facility to become a Hazard Category 1, 2 or 3, then the subcontractor is required to implement and be responsible for the requirements of 10 CFR 830.120.

The Quality Assurance requirements, as represented in this subcontract, are based on the scope and complexity of the subcontractor's scope and responsibilities. The subcontractor shall provide a written Quality Assurance Plan (QAP) for the quality oversight of this project which meets, at a minimum, the standards set forth in this subcontract. The subcontractor's QAP shall be subject to FERMCO compliance review and approval. The subcontractor shall also provide qualified Quality Assurance staff to execute the QA program.

FERMCO will perform Quality Assurance oversight of the subcontractor throughout the life of the project. The subcontractor shall maintain, in files on site and available to FERMCO for inspection at any time, copies of all QA/QC documents prepared by or for the subcontractor on equipment or work supplied or performed under the subcontract. Copies of these reports shall be furnished to FERMCO upon request.

J.3.5.1 Quality Assurance Plan

The subcontractor shall prepare and submit a QAP that governs all of its activities performed under its subcontract with FERMCO. The QAP shall address all activities included in the Statement of Work of this subcontract. The QAP shall identify job specific Quality Assurance requirements and the subcontractor's responsibilities for their implementation. FERMCO will audit and perform surveillances of the subcontractor's adherence to the QAP. The subcontractor's QAP and work practice shall address, at a minimum, the following eleven criteria:

J.3.5.1.1 Program

A description of the organizational structure, functional responsibilities, and interfaces for those managing, performing, and assessing the adequacy of work.

Environmental sampling and analysis shall comply with quality assurance and quality control requirements specified in Section C.6.2.17 (Sampling and Analysis), and Sections J.3.5.3.1 and J.3.5.3.2 of this Attachment.

Senior management for the subcontractor shall retain and exercise the responsibility for the scope and implementation of an effective QA Program.

The quality of items and processes shall be ensured to an extent consistent with their potential impact on the safe and reliable operation of the project. A graded approach shall be used to ensure that the resources applied are commensurate with the importance of the result and achievement of project goals.

The subcontractor shall assign the responsibility and authority to stop unsatisfactory work and control further processing, delivery, installation, or use of nonconforming items such that cost and schedule considerations do not override safety, quality, or environmental considerations.

J.3.5.1.2 Personnel Training and Qualification

All personnel shall be capable of performing their assigned tasks. Training plans shall be developed for all personnel. The training identified in the plans shall prepare the employee to perform the job. Qualification requirements (experience, education, and training) shall be documented for each position.

Training shall be presented by trained and qualified instructors. They may be training providers or qualified members of the organization requiring training. Instructors shall possess technical knowledge, experience, course development and instructional skills.

Personnel performing work that requires special skills or abilities or legally required training shall be qualified (and certified, if required) prior to performing that work. The certification program is to include demonstrated proficiency.

Training programs shall be periodically reviewed to determine program and instruction effectiveness, and shall be upgraded when required.

J.3.5.1.3 Quality Improvement and Corrective Action;

A system shall be established where items, activities, and processes that do not meet specified requirements are identified, controlled, and corrected to prevent their inadvertent test, installation, or use.

The disposition of items and processes which do not meet specified requirements shall be reviewed by qualified and knowledgeable personnel, and a justification for the disposition shall be documented.

Controls shall provide for the identification, documentation, evaluation, segregation where practical, and disposition of deviations and for notification to affected organizations.

The corrective action program shall include the identification of the root cause of problems to preclude recurrence.

J.3.5.1.4 Documents and Records

A written system shall be established and implemented to control preparation, review, approval, issuance, use, and revision of documents that establish policies, prescribe work,

specify requirements, or establish design. The scope of the document control system shall be defined.

Revisions to controlled documents shall be reviewed and approved by the organization that originally reviewed and approved them. An alternative organization may be designated based on technical competence and capability.

Control of superseded and cancelled documents shall include measures to ensure that only correct documents are in use. Record copies should be marked "superseded" or "cancelled" and kept for a specified retention period.

A system shall be established for implementation of processes to ensure that records are specified, prepared, legible, reviewed, approved, and maintained to accurately reflect completed work.

J.3.5.1.5 Work Processes

Work related instructions, procedures, and other forms of direction shall be developed, verified, validated and approved by technically competent personnel, and shall be provided to employees doing the work.

Work shall be performed to established technical standards and administrative controls. Work shall be planned, authorized and accomplished under controlled conditions using technical standards, instructions, procedures, or other appropriate means of detail commensurate with the complexity and importance of the work.

A system shall be implemented for a process to control the handling, storage, shipping, cleaning, and preservation of items to prevent damage, loss, or deterioration. Marking and labeling of items shall be maintained throughout packaging, shipping, handling, and storage.

A system shall be established to control the calibration, maintenance, and use of measuring and test equipment used for monitoring and data collection.

Monitoring and data collection equipment shall be of the accuracy and type suitable for the intended use. The types of equipment shall be specified in work documents. Equipment shall have calibration certifications traceable to national standards, where possible. Equipment on which calibration is overdue shall be tagged to prevent use until calibrated.

J.3.5.1.6 Design

A formal design process shall be established which provides control of design inputs, outputs, verification, configuration and design changes, documentation, records, and technical administrative interfaces.

The administrative interface process shall clearly indicate responsibilities for design output document activities including as-built mark-up and updating during project construction/production phases, document control, and records management.

Changes to final designs (including nonconforming items that are dispositioned "use as is" or "repair") are to be subjected to design control measures commensurate with those applied to

the original design and approved by the organization that approved the original design or a qualified designate.

Temporary modifications shall receive the same levels of control as the designs of permanent modifications.

Design records, maintained to provide evidence that the design was properly accomplished, are to include not only the final design output and revisions to the final output, but also the important design steps (calculations, analyses, and computer programs, for example) and the sources of input that support the final output.

The acceptability of design activities and documents, including design inputs, processes, outputs, and changes, are to be verified.

Computer programs are to be proven through previous use, or verified through testing or simulation prior to use.

The data collection process for characterizing environmental conditions shall be defined, controlled, verified, and documented.

Design verifications are to be conducted by qualified personnel who are knowledgeable of the design and its intent. These personnel may be from the same organization, but must not be those who performed the original design.

When a test program is used to verify the acceptability of a specific design feature, the test program is to demonstrate acceptable performance under conditions that simulate the most adverse design conditions that are expected to be encountered.

When timing cannot be achieved, the unverified portion of the design shall be identified and controlled. In all cases, design verifications shall be completed before relying on the systems, structures, and components to perform its function and before installation becomes irreversible.

As-built drawings and shop drawings shall be maintained after production or construction to show actual configuration.

J.3.5.1.7 Procurement

A program shall be established and implemented to ensure that purchased items and services meet established requirements and perform as expected.

Applicable technical and administrative requirements (such as specifications, codes, standards, tests and inspections, and acceptable criteria) shall be invoked for procurement of items and services.

Critical parameters and requirements such as submittals, product-related documentation, nonconformance requirements, administrative documentation, personnel or materials qualification, tests, inspections, and reviews shall be specified in procurement documents as line items.

Prospective suppliers are to be evaluated to ensure that only qualified suppliers are selected. The prospective suppliers shall be evaluated to verify their capabilities to meet performance and schedule requirements.

Measures for evaluating and selecting suppliers may include:

- a review of the supplier's history for providing identical or similar items or services;
- an assessment of the supplier's capability based on evaluation of its facilities, personnel, and programs; or
- an evaluation of documented qualitative and quantitative information provided by the supplier.

Procurement of laboratory subcontractors for analyzing environmental samples shall be strictly controlled. Only laboratories that have a demonstrated capability to provide the level of data quality required for a program or project shall be contracted.

Suppliers are to be evaluated periodically to confirm their continuing capabilities to provide acceptable products and services.

Supplier monitoring may include:

- surveillance of work activities;
- inspection of facilities and processes;
- review of plans and progress reports;
- processing of change information; and
- review and disposition of nonconformances.

Purchased items and services are to be accepted using specified methods (such as source verification, receipt inspection, pre-installation and post-installation tests, and certificates of conformance, or a combination of these methods).

Before an item is used or placed in service, procurement, inspection, and test requirements are to be satisfied.

The procurement system shall include provisions for inspections. Requirements for inspections shall be obtained from design documents. Inspections shall be adequate to ensure conformance with purchase requirements including verifying that specified documentation has been provided by the supplier. The inspections shall verify that items were not damaged during shipment.

Inspection may include the following methods:

- inspection of materials or equipment at the supplier's plant;
- receipt inspection of the shipped items;
- review of objective evidence such as certifications and reports and;
- verification of testing of items prior to or following shipment.

In cases where there are indications that suppliers knowingly supplied items or services of substandard quality, the subcontractor shall report the information to FERMCO and to the DOE Office of Inspector General.

J.3.5.1.8 Inspection and Acceptance Testing

A program shall be established and implemented to specify when and what type of inspections and tests (e.g., source, in-process, final receipt, maintenance, and in-service inspections, or bench, pre-operational, post-maintenance or operational tests) are required. This program shall ensure that items will perform as intended.

Administrative controls and status indicators are to be used to preclude inadvertent bypassing of required inspections and to prevent inadvertent operation of the item.

The inspection/testing program may be implemented by or for the organization performing the work to be inspected. When an organization performs its own inspections, personnel within that organization are not to inspect their own work for acceptance.

When acceptable criteria are not met, deficiencies are to be documented, resolved, and corrected areas are to be reinspected.

Inspection/test documentation shall contain the following provisions, as applicable:

- identification of characteristics to be examined;
- required qualifications of individuals who perform the examination;
- a description of the examination methods including equipment and calibration requirements;
- acceptance and rejection criteria;
- suitable environmental conditions;
- required safety measures; and
- mandatory hold points, when required.

Inspection/test results shall be evaluated and verified by authorized personnel to document that all requirements have been satisfied.

Records shall identify the following as applicable:

- item tested;
- date of test;
- tester or data tester;
- observations;
- results and acceptability; and
- action taken concerning any deviations noted.

J.3.5.1.9 Measuring and Test Equipment Requirements

A program shall be established and implemented to control the calibration, maintenance, accountability, and use of equipment used for acceptance of items during inspection and testing.

Measuring and test equipment is to be calibrated at specified intervals (or immediately before or after use) on the basis of the item's required accuracy, intended use, frequency of use, stability characteristics, and other conditions affecting its performance.

Measuring and test equipment shall be calibrated to standards traceable to the National Institute of Standards and Technology (NIST), or equivalent, and labelled or tagged to indicate its calibration status.

Measuring and test equipment found out of calibration shall be tagged or segregated and not used until it is recalibrated. The acceptability of items measured, inspected, or tested with an out of calibration device is to be determined.

J.3.5.1.10 Management Assessment

A program of planned and periodic (annually, at a minimum) management assessments shall be established and implemented. Implementation of the program is to focus on how well the integrated QA Program is working by identifying barriers which hinder the organization from achieving its objectives in accordance with quality, safety, and environmental requirements.

Management assessment shall be conducted in accordance with a plan, and should focus on management elements that affect work processes, such as strategic planning, organizational interfaces, cost control, use of performance indicators, staff training and qualifications, and supervisory oversight and support.

Management assessment results are to be documented. Senior management is to take prompt action and document resulting decisions in response to recommendations which is to include an evaluation of the effectiveness of management's actions.

J.3.5.1.11 Independent Assessment

A program for the planning and performance of independent assessments (audits, surveillances, inspections) of all activities, including design, construction, operations, and D&D shall be established and implemented. The subcontractor's Quality Assurance organization shall be primarily responsible for independent assessments. The program shall be applied to lower tier subcontractors and vendors as well as to the subcontractor.

Implementation shall focus on improving items and processes by emphasizing line organization's achievement of quality in compliance to environmental and safety and health requirements.

Personnel performing independent assessments are to monitor work performance, identify non-compliance activities and other abnormal performance and precursors of potential problems, identify opportunities for improvement, document and report results to a level of management having the authority to effect corrective action, and verify satisfactory resolution of problems.

Personnel performing independent assessments shall have the necessary technical knowledge to accurately observe and evaluate activities being assessed and to focus on improving the quality of the processes that lead to achieving compliance to environmental, safety and health, and remediation requirements.

Personnel performing independent assessment are not to have direct responsibilities in the area they are assessing.

Independent assessments shall be conducted using criteria that address environmental, safety and health, and remediation requirements. The assessments shall also describe acceptable work performance and promote improvement. They shall include an evaluation to determine whether technical requirements, not just procedural compliance, are being met.

A system of nonconformance reporting and corrective action identification and implementation shall be established. Follow-up reviews of deficient areas shall be conducted to verify that corrective actions have been implemented and shall validate the corrective action by measuring their effectiveness.

J.3.5.2 FERMCO Responsibilities

J.3.5.2.1 FERMCO Quality Assurance shall approve all subcontractor Quality Assurance Plans.

J.3.5.2.2 FERMCO Quality Assurance shall approve all subcontractor Quality Assurance Audit, Surveillance, and inspection schedules.

J.3.5.2.3 FERMCO Quality Assurance shall perform oversight of all of the subcontractor's activities by performing audits, surveillance, inspections and other assessments on the subcontractor's Quality Assurance program and work activities as necessary to ensure subcontract performance.

FERMCO shall perform an audit of the subcontractor's Management Plan and Quality Assurance Plan and Systems prior to finalization of the contract.

J.3.5.2.4 FERMCO Quality Assurance shall retain stop work authority.

J.3.5.2.5 FERMCO Quality Assurance shall assist the subcontractor in interfacing with other FERMCO departments in the resolution of quality related problems.

J.3.5.3 QA Technical Requirements

J.3.5.3.1 Sampling and Analysis Plans

The subcontractor shall develop Sampling and Analysis Plans (SAPs) for environmental (including air monitoring), process, and closure sampling that fulfill the requirements of the waste acceptance criteria of the Permitted Commercial Disposal Facility (PCDF) chosen to receive the waste. The subcontractor's SAP must also be approved by the EPA and produce defensible data in accordance with all federal, state and local regulations. The subcontractor may at its discretion, use the FERMCO Sitewide CERCLA Quality Assurance Plan (SCQ), approved by the EPA, or create its own plan.

J.3.5.3.2 Laboratory QA Requirements

All analytical services will meet the applicable requirements of the Waste Acceptance Criteria (WAC) of the PCDF chosen to accept the waste, as well as Sections 9 and 12, and Appendices E and G of the SCQ.

The laboratory chosen to provide analytical services shall be certified by the State of Utah.

The subcontractor shall be responsible for auditing its selected analytical laboratory. FERMCO reserves the right to audit the selected analytical laboratory.

J.3.5.3.3 Waste Acceptance Criteria

The subcontractor shall produce a quality program that insures that the operations comply with the chosen disposal site's waste acceptance requirements to ensure compliance with the waste acceptance criteria. Note: If NTS is chosen, this quality program will have to be a full NQA-1 program, following the requirements of NVO-325. If a PCDF is chosen, a different program may be used.

J.3.5.4 Summary of Deliverables

The subcontractor shall submit the following QA documents to FERMCO for compliance/conformance review and approval:

J.3.5.4.1 A Quality Assurance Plan

J.3.5.4.2 Audit, Surveillance, and Inspection Schedule, to include:

- Schedule of internal audits - annual, at a minimum. (To be conducted against the requirements of the Quality Assurance Plan);
- Construction surveillance and inspection schedule;
- Vendor or subcontractor audits, surveillances;
- Operations surveillance and inspection schedule - Routine Quality oversight of design, construction, startup and operations activities; and
- Acceptance inspection and testing program.

J.3.5.4.3 Sampling and Analysis Plan (per Section C.6)

J.4 ATTACHMENTS

J.4.1	ARARs and TBC Requirements Tables
J.4.2	Operable Unit 1 - Substantive Permitting Cross-Walk
J.4.3	Disposition of Construction Wastes in Radiological Controlled and Radiological Contamination Areas
J.4.4	Permitted Commercial Disposal Facility Waste Acceptance Criteria
J.4.5	[RESERVED]
J.4.6	WPRAP Hazard Category Worked Examples
J.4.7	Collective Bargaining Agreement between FERMCO and FAT&LC, 3/1/94
J.4.8	Project Labor Agreement (PLA) between FERMCO and GCBCTC, 3/30/93, and Addendum to the PLA, dated 4/8/96
J.4.9	FERMCO Memo M:ADM:(IR):94-1098, 5/24/94, Re: "Fernald Site Work Execution Agreement"
J.4.10	Greater Cincinnati Building & Construction Trades Council (GCBCTC) List of Contacts
J.4.11	Davis-Bacon Wage Decision No. 960034 for Hamilton County, Ohio
J.4.12	FAT&LC Wage Position Descriptions
J.4.13	Project Labor Agreement Letter of Assent (3/30/93)
J.4.14	Agreement to Subcontract Terms and Conditions/General Provisions
J.4.15	Bid Bond, Form No. FS-F-678 (6/15/93)
J.4.16	Payment Bond, Form No. FS-F-797 (6/15/93) (Needed for Award)
J.4.17	Performance Bond, Form No. FS-F-796 (6/15/93) (Needed for Award)
J.4.18	General Shipping Instructions, Rev. 7, Dated 3/12/96, Page Numbers 1-3
J.4.19	Subcontracting Plan Submitted in Accordance with Public Law 95-507
J.4.20	Temporary Services Agencies (6/27/95)
J.4.21	Environment, Safety & Health Bulletin, DOE/EH-0266, Issue No. 92-4, 8/92
J.4.22	Safety History and Program Data
J.4.23	Access & TLD Request, Form No. FS-F-3207 (Rev 3/3/93)
J.4.24	Substance Abuse Testing for FERMCO Construction Subcontractor Employee Site Access
J.4.25	Statement and Acknowledgement, Standard Form 1413
J.4.26	Subcontractor Daily Report
J.4.27	FERMCO Human Resources Policy 145 - Employee Discipline
J.4.28	FERMCO Human Resources Policy 109 - Applying for a Position Contained in the Job Opportunity Listings
J.4.29	FERMCO Site Procedure PT-0006 (Rev. 2) - Packaging Low-Level Radioactive Waste (LLRW) in ISO Containers for Shipment to the Nevada Test Site

J.4 ATTACHMENTS (Continued)

J.4.30	FERMCO Site Procedure PT-0007 (Rev. 2)- Packaging Low-Level Radioactive Waste (LLRW) in Metal Boxes for Shipment to the Nevada Test Site
J.4.31	FERMCO Engineering Procedure 12-6003 (Rev. 0) - Startup and System Operability Test Procedure
J.4.32	FERMCO Requirements Manual for Startup and Turnover (RM-0034, Rev. 0)
J.4.33	Sections 9 and 12, and Appendices E and G of the Sitewide CERCLA Quality Assurance Project Plan

Attachment J.4.1
ARARs and TBC Requirements Tables

TABLE J.4.1-1
LOCATION-SPECIFIC ARARS
(APPLICABLE REQUIREMENTS; RELEVANT AND APPROPRIATE REQUIREMENTS)

Category	Applicable Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Wildlife Protection	16 USC 1531 et. seq., and 50 CFR 17.21, 17.31, 17.61, 17.71, 17.94, 50 CFR 402, and Endangered Species Act All federal agencies must insure that any action authorized, funded or carried out by them is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of the constituent elements essential to the conservation of a listed species within a defined critical habitat. Additional requirements apply if it is determined that a proposed activity could adversely affect these species or their habitat.	In 1994, updated surveys at the FEMP determined the presence of summer habitat for the federally-listed endangered Indiana bat along Paddys Run including areas adjacent to OU1. This area is not critical habitat. Consultation with U.S. Fish and Wildlife Service will determine restorative measures that may need to be taken during and after remedial actions. If any endangered or threatened species are encountered, the additional requirements of the referenced regulation would be applicable. Efforts will be made during remediation to preserve riparian vegetation, habitat for the Indiana bat, to the maximum practicable extent. (**NOTE:** Mitigatory requirements will be determined and implemented by others on a site-wide basis.)		
Wildlife Protection	ORC 1531.25, 1518.02, and 1501: 18-1, Ohio Endangered Species Regulations No person shall take or possess any native species of wild animal, or any eggs, or offspring thereof, that is endangered with state-wide extinction.	Updated surveys in 1993 and 1994 found state-listed threatened Sloan's crayfish populations in sections of Paddys Run, including sections directly adjacent to OU1 area. Wastewater controls will be designed to minimize negative impacts on Paddys Run, to the maximum practicable extent during and after remedial activities. Process wastewater will not be discharged to Paddys Run from any OU1 operation. Stormwater flows from the new facilities area, for storms greater than the 25 year, 24 hour will discharge to Paddys Run. (**NOTE:** Mitigatory requirements will be determined and implemented by others on a site-wide basis.)		

TABLE 1
(Continued)

Category	Applicable Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Wildlife Protection	16 USC 66 *et seq.*, Fish and Wildlife Coordination Act Requires consultation with other state agencies for any activities which might affect any body of water for the purpose of conserving fish and wildlife resources.	Remedial activities at OU1 may have the potential to affect wildlife and fish in Paddys Run. Wastewater controls will be designed to minimize negative impacts on Paddys Run, to the maximum practicable extent during and after remedial activities. Process wastewater will not be discharged to Paddys Run from any OU1 operation. Stormwater flows from the new facilities area, for storms greater than the 25 year, 24 hour will discharge to Paddys Run.		
Historic Preservation	16 USC 469, Archaeological and Historic Preservation Act Requires preservation of artifacts and data associated with archaeological finds.	Historical data and artifacts are not expected to be discovered or destroyed during remedial activities at OU1. Nevertheless, the requirements of the law are applicable.		
Historic Preservation	16 USC 470 *et seq.*, National Historic Preservation Act DOE must take into account the effect of an undertaking on historic properties and accord the Advisory Council on Historic Preservation a reasonable opportunity to comment. Historic properties are described as any prehistoric or historic district, building, site, structure, or object included in, or eligible for inclusion in the National Register of Historic Places. This term includes artifacts, records, and remains that are related to and located within such properties. Historic properties that are substantially altered or demolished must be recorded for future use and reference.	Areas adjacent to OU1 boundaries will be surveyed pursuant to the programmatic agreement by the DOE, the Advisory Council on Historic Preservation, and the Ohio Historic Preservation Office. The programmatic agreement will stipulates what actions are required for compliance with the National Historic Preservation Act. Historic sites listed or eligible for listing in the *National Register of Historic Places* are not present within OU1 nor is it expected that any will be. Nevertheless, the requirements of the law are applicable.		

TABLE 1
(Continued)

Category	Applicable Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Historic Preservation	16 USC 470 (aa) - 470 (11), Archaeological Resources Protection Act Requires permit for removal of any archaeological resources from federal lands.	OU1 is located on federal land. Although archeological resources are not expected on the site, the requirements of the law remain applicable to OU1 remedial activities.		
Historic Preservation	16 USC 431-433 and USC 461-467, Antiquities Act and Historic Sites Act. Requires that no person may appropriate, excavate, injure or destroy any historical or prehistoric ruin or monument or any object or antiquity situated or controlled by the U.S. Government without an applicable permit. Also requires the identification and preservation of cultural resources on federal lands.	Although OU1 is not expected to contain cultural resources or natural landmarks of significance, it is located on federal land and the law is applicable should any cultural resources be discovered during remedial actions on site.		
Historic Preservation	25 USC 3001, Native American Graves Protection and Repatriation Act Provides for return of human remains and cultural objects from Native American graves to affiliated tribes.	Although OU1 does not contain known American Indian burial grounds, this law would apply should graves and human remains be discovered during excavation of the waste pits.		
Historic Preservation	42 USC 1996, American Indian Religious Freedom Act Provides for tribal access by native peoples to grave sites and sites of cultural, symbolic, or religious significance.	Although no sites of this nature have been identified at OU1, the law is applicable to federal lands and activities.		

TABLE 1
(Continued)

Category	Applicable Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Historic Preservation	Executive Order 11593, Protection and Enhancement of Cultural Environment. Requires an inventory of site for potential historic places for eligibility in the *National Register of Historic Places*.	The requirement is applicable to activities at OU1. An updated inventory will be completed prior to remedial action. It is not expected that any sites of this nature will be identified at OU1.		
Siting	10 CFR 1022, Protection of Wetlands and Floodplain Management 10 CFR 1022 contains the DOE regulation implementing Executive Orders 11990 and 11988. Executive Order 11990 requires that Federal agencies take action to avoid adversely impacting wetlands wherever possible, to minimize wetlands destruction, to preserve the values of wetlands, and to prescribe procedures to implement the policies and procedures of the Executive Order. Executive Order 11988 requires Federal agencies undertaking actions within a floodplain to evaluate the potential the action has for adverse impact on the floodplain. If it is determined that adverse impacts could occur, the effects of the action must be minimized to the extent practical.	Approximately 36 acres of jurisdictional wetlands were identified on the site as the result of the 1993 wetland delineation. Wetland impacts will be minimized during remedial activities by avoiding these areas to the maximum extent possible. OU1 is in the immediate vicinity of the Paddys Run Floodplain. Remediation activities will be undertaken while minimizing impacts to the floodplain primarily through minimizing activities within the floodplain which would cause substantial adverse changes to the floodplain. (**NOTE:** Mitigatory requirements relative to wetlands impacts and the final topography (and its impact on the floodplain) will be assessed by others on a site-wide basis. The final grading plan will be reflective of these efforts.)		

TABLE 1
(Continued)

Category	Applicable Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Construction	33 CFR 330, Nationwide Permit Program (33 CFR 323 and OAC 3745-32) The Army Corps of Engineers authorizes discharges of dredge or fill material into wetlands and waters of the United States under its Nationwide Permit or Individual Permit Programs. Section 401 State Water Quality Certification is also required for these types of discharges. Approximately 4.9 acres of jurisdictional wetlands will be impacted as a result of the OU1 Remedial Action and will be subjected to the substantive requirements of these regulations. **See Table 4 in Attachment J.4.2.2 for a detailed discussion relative to the substantive requirements of Nationwide Permit 26.**	Discharges of dredged and fill material associated with the OU1 remedial action will be conducted in accordance with the substantive requirements of Nationwide Permit 26 - Headwaters and Isolated Waters Discharges and its corresponding Section 401 State Water Quality Certification. **(NOTE:** Wetland mitigatory requirements for OU1 impacts will be addressed by others under a site-wide wetland mitigation plan.) **See Table 4 in Attachment J.4.2.2 for additional details.**	**Compliance strategy should be addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 4)**	**Addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 Table 4)**

TABLE J.4.1-2
CHEMICAL-SPECIFIC ARARS
(APPLICABLE REQUIREMENTS; RELEVANT AND APPROPRIATE REQUIREMENTS; TBCs)

Category	Applicable Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Surface Water Discharges	OAC 3745-1 Ohio Water Quality Standards It is the purpose of these Water Quality Standards to establish minimum water quality requirements for all surface waters of the State, thereby protecting public health and welfare; and to enhance, improve, and maintain water quality as provided under the laws of the State of Ohio, and ORC 6111.041, the Federal Clean Water Act, 33 U.S.C. Section 1251 *et seq.* Whenever two or more use designations apply to the same surface water, the more stringent criteria of each use designation will apply.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP wastewater treatment system where it will be combined with other site wastewaters for treatment. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1.		

TABLE 2
(Continued)

Category	Applicable Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Surface Water Discharges	<u>OAC 3745-01-04 Criteria Applicable to All Waters</u> The following general water quality criteria shall apply to all surface waters of the State including mixing zones. To every extent practical and possible as determined by the director, these waters shall be: (A) Free from suspended solids or other substances that enter the waters as a result of human activity and that will settle to form putrescent or otherwise objectionable sludge deposits, or that will adversely affect aquatic life; (B) Free from floating debris, oil, scum and other floating materials entering the waters as a result of human activity in amounts sufficient to be unsightly or cause degradation; (C) Free from materials entering the waters as a result of human activity producing color, odor or other conditions in such a degree as to create a nuisance; (D) Free from substances entering the waters as a result of human activity in concentrations that are toxic or harmful to human, animal or aquatic life and/or are rapidly lethal in the mixing zone; (E) Free from nutrients entering the waters as a result of human activity in concentrations that create nuisance growths of aquatic weeds and algae.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP wastewater treatment system where it will be combined with other site wastewaters for treatment. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1.		

TABLE 2
(Continued)

Category	Applicable Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Surface Water Discharges	OAC 3745-1-07, Table 7-1 Numerical and Narrative Criteria for Aquatic Life Habitat and Water Supply Use Designation Surface Waters in the State of Ohio must comply with the maximum concentrations of each contaminant of concern listed in Table I-5 and I-6 in Attachment I for inside and outside the mixing zones of the receiving water to protect warm water aquatic habitats.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP wastewater treatment system where it will be combined with other site wastewaters for treatment. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1.		
Surface Water Discharges	OAC 3745-1-07, Table 7-10, Outside Mixing Zone Maximum Criteria for Water Hardness Dependent Parameters in Warm Water Habitats Table I-7 in Attachment I contains the numerical limits on cadmium, copper, chromium, lead, and silver.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP wastewater treatment system where it will be combined with other site wastewaters for treatment. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1.		

TABLE 2
(Continued)

Category	Applicable Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Surface Water Discharges	OAC 3745-1-07, Table 7-11 Outside Mixing Zone 30-Day Average Criteria for Water Hardness Dependent Parameters in Warm Water Habitats Table I-8 in Attachment I contains the average numerical limits for cadmium, copper, chromium, lead, and silver.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP wastewater treatment system where it will be combined with other site wastewaters for treatment. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1.		
Surface Water Discharges	OAC Table 7-12 Inside Mixing Zone Maximum Criteria for Water Hardness Dependent Criteria in Warm Water Habitats Table I-8 in Attachment I contains numerical limits for cadmium, copper, chromium, lead, and silver.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP wastewater treatment system where it will be combined with other site wastewaters for treatment. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1.		

TABLE 2
(Continued)

Category	Applicable Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Surface Water Discharges	OAC 3745-1-07 Outside Mixing Zone Maximum Criteria for pH dependent Parameters in warm water Aquatic Habitats Table I-10 in Attachment I contains the numerical limits for pentachlorophenol. OAC 3745-1-07 Inside the Mixing Zone Maximum Criteria for pH dependent Parameters in warm water Aquatic Habitats Table I-11 in Attachment I contains the numerical limits for pentachlorophenol.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP wastewater treatment system where it will be combined with other site wastewaters for treatment. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1.		
Surface Water Discharges	OAC 3745-1-07 Lower Miami River Temperature Criteria in Fahrenheit and degrees (Celsius) Table I-12 in Attachment I contains the acceptable monthly temperatures for water discharged to the Lower Great Miami River.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP wastewater treatment system where it will be combined with other site wastewaters for treatment. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1.		

TABLE 2
(Continued)

Category	Applicable Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Air Discharges	OAC 3745-17-07 Particulate Matter Standards Visible particulate emissions from any stack may exceed twenty per cent opacity, as a six minute average, for not more than six consecutive minutes in any sixty minutes, but shall not exceed sixty per cent opacity, as a six-minute average, at any time. **See Table 1 in Attachment J.4.2.2 for a detailed discussion relative to substantive requirements.**	The State standard for particulate emissions is an ARAR because it places a time limit on particulate emissions that may work in tandem with the Federal annual average. **See Table 1 in Attachment J.4.2.2 for additional details.**	**Compliance strategy should be addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**	**Addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1)**

TABLE 2
(Continued)

Category	To-be-Considered Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Radiation	DOE Order 5400.5 Radiation Protection of the Public and the Environment To prevent buildup of radionuclide concentrations in sediment, liquid process waste streams containing radioactive material in settlable solids may be released to natural waterways if the concentration of radioactive material in the solids present in the waste stream do not exceed 5 pCi/g above background levels of settle-able solids of alpha-emitting radionuclides or 50 pCi/g above background level of settle-able solids for beta-gamma-emitting radionuclides. To protect native animal aquatic organisms, the absorbed dose to these organisms shall not exceed 1 rad per day from exposure to the radioactive material in liquid wastes discharged to material waterways.	OU1 remediation activities will not result in the direct discharge of wastewater to a water of the State. Wastewater generated by OU1 remediation activities will be pretreated and discharged to the existing FEMP wastewater treatment system where it will be combined with other site wastewaters for treatment. Treated wastewaters will be discharged in accordance with the requirements of the FEMP NPDES permit and applicable numeric and narrative water quality standards promulgated in OAC 3745-1.		
Radiation	DOE Order 5400.5 Radiation Protection of the Public and Environment DOE Order 5400.5 requires compliance with 40 CFR Part 61, Subpart H criterion of 10 mrem/year effective dose equivalent and monitoring of point-source emissions. **See Table 1 in Attachment J.4.2.2 for a detailed discussion relative to substantive requirements.**	**See Table 1 in Attachment J.4.2.2 for additional details.**	**Compliance strategy should be addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**	**Addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**

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TABLE 2
(Continued)

Category	To-be-Considered Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Radiation	<u>DOE Order 5400.5</u> Residual plus natural dose limit for public exposure to residual radioactive material are 100 mrem effective dose equivalent per year. Guidelines for residual concentrations of radionuclides in soil shall be derived from the basic dose limits by means of an environment pathway analysis using specific property data where available. Procedures for these derivations are given in DOE/CH-8901. Residual concentrations of radioactive material in soils are defined as those in excess of background concentrations averaged over an area of 100 square meters. Control and Stabilization and Administrative Control features shall be designed to provide to the extent reasonably achievable, an effective life of 50 years with a minimum life of at least 25 years. Groundwater shall be protected in accordance with legally applicable Federal and State standards.	All waste pit material will be removed from OU1. The only residual material will be soil that meets the Final Remediation Levels established by the OU5 remedial action. The Final Remediation Levels have been developed in accordance with this requirement. Compliance will be demonstrated on a sitewide basis following remediation of the entire site by the Soil Remediation Project. Some material from OU1 will be placed into the On-Site Disposal Facility. The disposal facility will be designed to meet this requirement and demonstration of compliance will be performed by the Soil Remediation Project.		

TABLE 2
(Continued)

Category	To-be-Considered Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Soil Remediation	<u>40 CFR 761.125 Requirements for PCB Spill Cleanup</u> PCBs at concentrations greater than 50 ppm are subject to decontamination TSCA requirements in 40 CFR 761.120(b). PCB containers containing non-liquid PCBs, such as contaminated soil, rags, and debris designated for disposal may be stored temporarily (up to 30 days from the date of removal) in an area that does not comply with the storage building requirements at 40 CFR 761.65 (b). <u>40 CFR 761.125(c)</u> Soils in non-restricted access areas contaminated by a PCB spill will be decontaminated to 10 ppm PCB by weight, provided that the soil is excavated to a minimum depth of 10 inches. The excavated soils will be replaced with clean soils, i.e., containing <1 ppm PCB, and the spill site will be restored (e.g., replacement of turf) [40 CFR 761.125(c)(4)(v)]. For soils in restricted access areas, decontaminate to 25 ppm PCB by weight [40 CFR 761.125(c)(3)(v)].	Concentrations of PCBs at OU1 are expected to be less than 50 ppm. This regulation would then be considered guidance to be considered.		

000325

TABLE J.4.1-3
ACTION-SPECIFIC ARARS
(APPLICABLE REQUIREMENTS; RELEVANT AND APPROPRIATE REQUIREMENTS; TBCs)

Category	Applicable Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Radon	40 CFR Part 61, Subpart Q Emission of radon-222 from DOE interim and storage facilities is limited to 20 pCi/m²/s on an average over the entire source. **See the discussion in Section J.4.2.2.3 and Table 1 of Attachment J.4.2.2 for a detailed discussion relative to substantive requirements.**	**See the discussion in Section J.4.2.2.3 and Table 1 of Attachment J.4.2.2 for additional details.**	**Compliance strategy should be addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**	**Addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**
Stormwater Control	40 CFR 122.26 (OAC 3745-38) Discharge of Storm Water Runoff Stormwater runoff from landfills, construction sites, and industrial activities must be monitored and controlled. A Storm Water Pollution Prevention Plan (SWPPP) is required for construction activities which result in a total land disturbance of 5 or more acres.	Remedial activities will comply with an approved FEMP SWPPP which will include specific inspection and monitoring criteria applicable to all site projects. Guidelines set forth in Rainwater and Land Development, Ohio's Standard for Stormwater Management Stream Protection, 1996, will be followed.		
Well Abandonment	OAC 3745-9-10 Ohio Water Well Standards Abandonment of Test Holes and Wells	***These requirements for closure of test holes and wells at the FEMP are implemented through existing site procedures.***		

TABLE 3
(Continued)

Category	Applicable Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Hazardous Waste	ORC 3734.02(H) Digging Where Hazardous or Solid Waste was Located Filling, grading, excavating, building, drilling, or mining on land where hazardous waste or solid waste facility was operated is prohibited without prior approval from the Director of the Ohio EPA.	This requirement needs no further discussion relative to attainment, since Ohio EPA concurrence on the OU1 ROD has met the intent of this requirement.		
Hazardous Waste	OAC 3745-56-51, 54 and 58; Waste Piles These requirements specify design and operating requirements, monitoring and inspection, closure and post-closure care. **See Table 3 in Attachment J.4.2.2 for a detailed discussion relative to specific substantive requirements.**	The requirements for hazardous waste piles are potentially applicable only to waste excavated from Pits 4 and 5. **See Table 3 in Attachment J.4.2.2 for additional details.**	**Compliance strategy should be addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 3).**	**Addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 3).**
Air Discharges	OAC 3745-15-07(A) Ohio Air Pollution Control Regulations Describes forms of air pollution nuisances and prohibits their emission or escape. **See Table 1 in Attachment J.4.2.2 for a detailed discussion relative to substantive requirements.**	Both excavation and waste treatment processes have the potential to generate prohibited fugitive emissions. **See Table 1 in Attachment J.4.2.2 for additional details.**	**Compliance strategy should be addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**	**Addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**
Fugitive Dust	OAC 3745-17-08 Control of Fugitive Dust Requires the minimization or elimination of visible emissions of fugitive dust generated during grading, loading, or construction operations and other practices which emit fugitive dust. **See Table 1 in Attachment J.4.2.2 for a detailed discussion relative to substantive requirements.**	The implementation of remedial action *alternatives will require the movement of dirt* and other material likely to result in fugitive dust emissions. **See Table 1 in Attachment J.4.2.2 for additional details.**	**Compliance strategy should be addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**	**Addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**

TABLE 3
(Continued)

Category	Applicable Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Air Discharges	OAC 3745-21-02(C) and OAC 3745-21-03(D) Ambient air quality standards and guidelines and methods of ambient air quality measurements (for non-methane hydrocarbons). Mean ambient concentration of non-methane hydrocarbons not to exceed 160 μg/cubic meters (0.24 ppm as carbon) between 6 and 9 a.m.; methods for determining ambient concentration of non-methane hydrocarbons. **See Table 1 in Attachment J.4.2.2 for a detailed discussion relative to substantive requirements.**	During drying, hydrocarbon soil contaminants may be evolved with the steam. An uncontrolled release could lead to a violation of this standard. Air emissions will be determined during design and appropriate design measures will be included to insure compliance with this requirement. **See Table 1 in Attachment J.4.2.2 for additional details.**	**Compliance strategy should be addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**	**Addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**
Air Discharges	OAC 3745-21-07 (G)(2) Control of emissions of organic material from stationary sources. Emissions of photochemical reactive material from processes, including drying, not to exceed 40 lbs/day, with a peak of 8 lbs/hour. **See Table 1 in Attachment J.4.2.2 for a detailed discussion relative to substantive requirements.**	Data from the OU1 Remedial Investigation Report indicate that VOCs do not need to be controlled because of their low concentrations. Although the concentration of organic material in the pit waste is expected to be low, the volume of the waste to be treated could result in sufficient emissions for this standard to be violated if emissions are uncontrolled. Note that it is current Ohio EPA policy to consider all VOCs to be photochemical reactive materials. **See Table 1 in Attachment J.4.2.2 for additional details.**	**Compliance strategy should be addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**	**Addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**

TABLE 3
(Continued)

Category	Applicable Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Air Discharges	OAC 3745-31-05(A)(3) Permit to Install The director shall issue a permit to install if he determines that the installation or modification and operation of the air contaminant source will employ the best available technology. **See Table 1 in Attachment J.4.2.2 for a detailed discussion relative to substantive requirements.**	Although an administrative Permit to Install is not required for alternatives involving treatment, the substantive requirements of this section must be met by employing Best Available Technology (BAT) for treating particulate and off-gas emissions. **See Table 1 in Attachment J.4.2.2 for additional details.**	**Compliance strategy should be addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**	**Addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**
NEPA	10 CFR 1021.2 DOE actions must be subjected to NEPA evaluation as outlined by CEQ regulations in 40 CFR 1500-1508.	On June 13, 1994, the DOE issued a revised policy statement on NEPA. The new policy allows DOE, at CERCLA sites, to rely on the CERCLA process to satisfy the procedural aspects of NEPA. NEPA values have been incorporated into the Final Operable Unit 1 Feasibility Study Report.		

TABLE 3
(Continued)

Category	Relevant and Appropriate Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Air Discharges	40 CFR 61.670 Subpart OOO Stack emissions from affected facilities shall not: • Contain particulate matter in excess of 0.05 g/dscm; or • Exhibit greater than 7 percent opacity, unless the stack emissions are discharged from an affected facility using a wet scrubbing control device. **See Table 1 in Attachment J.4.2.2 for a detailed discussion relative to substantive requirements.**	These standards are relevant and appropriate to OU1 remedial activities since they specify requirements for crusher and conveyor systems. The standards will be considered when determining BAT requirements for these systems in accordance with OAC 3745-31-05(A)(3). **See Table 1 in Attachment J.4.2.2 for additional details.**	**Compliance strategy should be addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**	**Addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**
BMP Program	40 CFR 125.100 and 125.104 Discharge of Treatment System Effluent Best Management Practices Development and implement a BMP program to prevent the release of toxic or hazardous pollutants to waters of the U.S. Development and implementation of a sitewide BMP Program is also required as a condition of the FEMP NPDES Permit.	***This requirement is programmatic and is met by the approved Best Management Practices Plan currently in place at the FEMP. The FEMP BMP Plan may require revision to include any special circumstances involving this remedial action.***		
Solid Waste	40 CFR 241 Subpart B (OAC 3745-27), RCRA Subtitle D On-Property Solid Nonhazardous Waste Management Facilities Design standards are presented in the following citations: 241.200-2, 241.201-2, 241.202-2, 241.203-2, 241.204-2, 241.205-2, 241.206-2, 241.207-2, 241.208-2, 241.209-2, and 241.210-2.	Land disposal of solid waste will not occur in OU1. Solid waste from OU1 destined for on-site disposal will be sent to the On-Site Disposal Facility. The OU1 selected remedy involves handling residual contaminated soils and oversized materials in accordance with the OU5 and OU3 RODs, respectively. The OU1 design will necessarily reflect any requirements developed through the On-Site Disposal Facility design, relative to activities resulting in the placement of OU1 materials in the On-Site Disposal Facility.		

TABLE 3
(Continued)

Category	Relevant and Appropriate Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Hazardous Waste	40 CFR 262.11 (OAC 3745-52-11) Hazardous Waste Determinations Any generator of waste must determine whether or not the waste is hazardous. **See Table 3 in Attachment J.4.2.2 for a detailed discussion relative to substantive requirements.**	Excavation, size reduction, homogenization, blending, and drying of pit wastes are process activities which result in generation of a single waste stream. The newly generated waste is the waste stream that will be shipped off-site for disposal and represents the waste that must comply with regulatory requirements and disposal facility waste acceptance criteria. As documented in the OU1 Feasibility Study, Proposed Plan, and Record of Decision, this waste stream does not contain RCRA listed wastes; and in accordance with US EPA guidance for Superfund sites and 40 CFR 262.11 (c), the waste will be sampled for RCRA characteristics only. The methods that will be used to demonstrate compliance with regulatory criteria and WAC will be included in the Sampling and Analysis Plan developed to support the implementation of off-site shipping/ disposal. **See Table 3 in Attachment J.4.2.2 for additional details.**	**Compliance strategy should be addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 3).**	**Addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 3).**
Hazardous Waste	Closure 40 CFR 264, Subpart G (OAC 3745-55-(11-16)) Operator must close facility in a manner that: • Minimizes the need for further maintenance • Minimizes post-closure escape of hazardous constituents • Complies with specific unit type closure requirements **See Table 3 in Attachment J.4.2.2 for a detailed discussion relative to substantive requirements.**	As documented in the Draft Director's Findings and Orders between Ohio EPA and DOE, demonstration of compliance with substantive closure and post-closure requirements for hazardous waste management units will be documented in remedial design and remedial action deliverables. DOE will provide a cross-reference to Ohio EPA that will contain an index to closure and post-closure requirements within the RD/RA deliverables. The RD/RA deliverables will be submitted for review in accordance with the Amended Consent Agreement. **See Table 3 in Attachment J.4.2.2 for additional details.**	**Compliance strategy should be addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 3).**	**Addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 3).**

TABLE 3
(Continued)

Category	Relevant and Appropriate Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Air Discharges	40 CFR 264.1030 - 264.1036, Subpart AA Air Emission Standards for Process Vents • Reduce total organic emissions below 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr) • Control device (condenser and absorber) must recover organic vapors with an efficiency of 95 percent or greater. **See Table 1 in Attachment J.4.2.2 for a detailed discussion relative to substantive requirements.**	No regulations have been promulgated for process vents associated with thermal drying; however, 40 CFR 264.1030 - .0136 will be relevant and appropriate but not applicable to air emission standards for process vents associated with thermal drying. **See Table 1 in Attachment J.4.2.2 for additional details.**	**Compliance strategy should be addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**	**Addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**
Hazardous Waste	Post-Closure 40 CFR 264 Subpart G 40 CFR 264.117 (OAC 3745-55-17) 40 CFR 264.119 (OAC 3745-55-19) Post-closure care and use of property for a period as necessary to protect human health and the environment including: • Access controls • Monitoring Post-closure notices must include deed notation/use restriction. **See Table 3 in Attachment J.4.2.2 for a detailed discussion relative to substantive requirements.**	As documented in the Draft Director's Findings and Orders between Ohio EPA and DOE, demonstration of compliance with substantive closure and post-closure requirements for hazardous waste management units will be documented in remedial design and remedial action deliverables. DOE will provide a cross-reference to Ohio EPA that will contain an index to closure and post-closure requirements within the RD/RA deliverables. The RD/RA deliverables will be submitted for review in accordance with the Amended Consent Agreement. **See Table 3 in Attachment J.4.2.2 for additional details.**	**Compliance strategy should be addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 3).**	**Addressed in Substantive Permitting Crosswalk (Attachment J.4.2.2 - Table 1).**

TABLE 3
(Continued)

Category	Relevant and Appropriate Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Monitoring	OAC 3745-57-91 and 92, Miscellaneous Methods of Waste Treatment Parts 91 and 92 include requirements for miscellaneous units environmental performance standards and monitoring, analysis, inspection, response, reporting, and corrective action.	This ARAR will be met by the implementation of activities associated with other ARARs that are protective of human health and the environment. Releases to the environment will be controlled using appropriate ventilation (for air emissions) and a stormwater/wastewater collection system (for water discharges).		
CAMUs	Corrective Action for SWMUs 40 CFR Subpart S 40 CFR 264.552,.553 Corrective Action Management Units (CAMUs) might be designed at the site as areas where remediation wastes (solid, hazardous, or contaminated media and debris) might be placed during the process of remediation. Temporary units (TUs) consisting of tanks and container storage units might be used to store and treat hazardous waste during the process of corrective action.	As an ARAR, the CAMU designation does not apply to waste disposed off-site; however, it does apply to waste that is managed on-site. OU1 pit wastes will be disposed of at an off-site facility and therefore, must meet all regulatory and disposal facility requirements. CAMUs can apply to residual soils remaining on site. As such, residual OU1 soils will be managed in accordance with the OU5 ROD which designates the FEMP site as a CAMU.		

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TABLE 3
(Continued)

Category	To-be-Considered Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
	DOE Order 5400.1 @ p. iv - 1 Since each DOE facility is unique, the need and level of effort for monitoring programs shall be determined by the appropriate field organization on a case-by-case basis.	OU1 is part of a DOE facility and is subject to these orders. The existing FEMP sitewide monitoring program will be used for the remediation facilities. If necessary, the existing program may be modified, with the additional monitoring reflected in the Sampling and Analysis Plan submitted in accordance with the Remedial Action Work Plan.		
	DOE Order 5400.1 @ iv - 9, 10 Groundwater that is or could be affected by DOE activities shall be monitored to determine and document the effects of operations on groundwater quality and quantity and to demonstrate compliance with DOE requirements and applicable Federal, State, and local laws and regulations.	As discussed in Subsection 4.4.1 of the OU1 Remedial Design Work Plan, the existing FEMP groundwater monitoring program will be used for assessing potential impacts to the groundwater due to planned OU1 remediation activities.		
	DOE Order 5820.2A @ 1 Radioactive Waste Management DOE 5820.2A III.3h Management of Low-Level Waste, Long-Term Storage Radioactive and mixed wastes shall be managed in a manner that assures protection of the health and safety of the public, DOE and contractor employees, and the environment. 5820.2A III.3h requires achieving performance objectives of DOE. 5820.2A III.3a requires records and documentation be kept for storage of low-level waste and permits the storage of waste until disposal by approved methods.	The treatment and storage of OU1 radioactive wastes, and the other pollutants or hazardous substances they contain, will be accomplished in a manner that complies with all applicable Federal, State and local environmental, safety, and health laws and regulations, and DOE requirements.		

Attachment J.4.2
Operable Unit 1 - Substantive Permitting Cross-Walk

ATTACHMENT J.4.2
OPERABLE UNIT 1 - SUBSTANTIVE PERMITTING CROSS-WALK

J.4.2.1 Introduction

The Operable Unit 1 Record of Decision (ROD) established thermal drying and the subsequent off-site disposal of Operable Unit 1 wastes at a permitted commercial disposal facility as the selected remedy for the Operable Unit 1 remedial action. The Operable Unit 1 ROD also established applicable and relevant and appropriate requirements (ARARs) that must be followed to ensure that Operable Unit 1 remedial activities are conducted in compliance with the substantive requirements of existing federal, state, and local environmental laws and regulations.

Operable Unit 1 remedial activities are regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). Section 121(e) of CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300 specifies that on-site remedial actions are exempt from the requirement to obtain formal permit approval, provided these actions are conducted in compliance with the substantive requirements of applicable and/or relevant and appropriate federal, state and local environmental permits and regulations.

To comply with these CERCLA and NCP driven requirements, DOE is required to provide U.S. and Ohio EPAs with information demonstrating how remedial activities will comply with substantive permitting and ARAR driven requirements associated with the selected remedy for each operable unit at the Fernald site. DOE has committed to providing this information as part of the Remedial Design Work Plans currently being prepared for the various operable units. DOE has further committed to providing this information during the design process in the form of Permitting and ARAR Cross-Walk Tables, in which all substantive permit and ARAR related requirements are identified, a compliance strategy is provided for meeting the requirement reflective of the design, and an index is provided of where in the design package the particular requirement is specifically addressed. A final demonstration of ARAR and substantive permitting compliance will be provided for during the Remedial Action planning/submittal process.

This attachment provides an overview of specific substantive permitting and ARAR driven requirements associated with the Operable Unit 1 remedial action. Tables 1 through 4 of this attachment provide a detailed listing of substantive permitting requirements associated with the Operable Unit 1 remedial action, and a format wherein a compliance strategy reflective of the design/implementation can be identified. In addition, these tables provide an index as to where, within the various remedial design/remedial action documentation (submitted by the subcontractor), a discussion can be found supporting this compliance strategy. Additional ARARs associated with the Operable Unit 1 remedial action that are not related to the issuance of a specific permit, are discussed in Attachment J.4.1.

J.4.2.2 Substantive Permitting Requirements for Air Contaminant Sources

J.4.2.2.1 Applicability of Air Permit Program

The OU1 remedial action consists of the excavation and thermal drying of material contained in Waste Pits 1-6, the Clearwell, and Burn Pit. As a result of these activities numerous

sources of fugitive and point source emissions of air contaminants will arise. These sources are subjected to compliance with the provisions of existing federal and state air control laws.

J.4.2.2.2 Substantive Air Permitting Requirements Associated with the Operable Unit 1 Selected Remedy

Under the federally enforced National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart H Standard promulgated in 40 CFR Part 61, Subpart H, radiological emissions from all sources at the site are limited to an annual effective dose equivalent of 10 mrem per year. Pursuant to the NESHAP Subpart H standard, emission estimates must be prepared for fugitive and point-source air emissions associated with the Operable Unit 1 remedial action to demonstrate compliance with the 10 mrem/year standard. Each potential air emissions point source must be evaluated (by modeling) prior to placement to determine permitting and monitoring requirements. Specifically, point sources with the potential for releases that could exceed a 0.1 mrem/year dose to any member of the general public on an uncontrolled basis must be continuously monitored. In addition, a notice of project completion for sources that exceed a 0.1 mrem/year dose to any member of the general public on a controlled basis is required.

In addition to the federal requirements described above, the substantive permitting requirements of Ohio EPA's permit to install (Ohio Administrative Code [OAC] 3745-31) and permit to operate (OAC 3745-35) rules are applicable to air contaminant sources associated with the Operable Unit 1 remedial action. The use of Best Available Technology (BAT) to control air emissions is included under these requirements.

J.4.2.2.3 Policy for Control of Radon Emissions

This section presents the strategy that will be used as the basis for limiting radon emissions generated during Operable Unit 1 remediation activities. This strategy addresses controls required to meet environmental regulatory requirements; evaluation of occupational radiological requirements may impose operational restrictions or other measures in addition to those addressed herein. Three distinct types of radon emission sources during remedial activities for Operable Unit 1 are:

- point source - dryer stack(s)
- waste pits (which includes the Burn Pit and the Clearwell)
- excavated waste materials and working piles

J.4.2.2.3.1 Point Source - Dryer Stack(s)

Radon emissions from the dryer or any other stack/point sources will be controlled so that radon emissions from each point source results in a maximum allowable off-site impact of 0.5 pCi/l annual average above background. This limit is based on 40 CFR 192, Subpart A, "Standards for the Control of Residual Radioactive Materials from Inactive Uranium Processing Sites." Although this limit is not directly applicable to the point source(s) in question, it is being identified as a relevant and appropriate limit. Therefore, the 0.5 pCi/l annual average limit at the site boundary was used to establish a stack limit for the dryer (and any other stack

or point source) using EPA-approved dispersion modeling. Compliance with the 0.5 pCi/l limit will be demonstrated through continuous monitoring of emissions from the stack and comparison of these measured emissions to the stack limit described above.

J.4.2.2.3.2 Waste Pits

Unexcavated portions of the waste pits are considered interim storage sources and will be subjected to the NESHAP Subpart Q standard of 20pCi/m^2/sec radon flux rate, calculated as an average for the entire source - in this case the entire waste pit in question. The radon flux rate from the unexcavated parts of Waste Pits 1, 2, 3, and 4 were measured in 1992 per 40 CFR 61 Appendix B, Method 115 and were below the NESHAP Subpart Q standard. In accordance with Method 115, the radon flux rate from the Clearwell and Waste Pit 5 can be assumed to be zero without measurement because these areas are covered with water. No radon flux measurements were necessary from Waste Pit 6 and the Burn Pit because these pits do not contain a sufficient quantity of radium-226.

Once excavation of a pit begins, the portion of the pit being excavated will be treated as an intermittent fugitive emission source; radon emissions will be minimized through the use of BAT controls as described below for excavated materials and working piles. BAT controls can consist of either the application of water spray or a dust suppressant, or the placement of a tarp over the exposed areas or building a ventilated temporary structure with controls over the exposed areas. These measures are described in greater detail in Table 1.

J.4.2.2.3.3 Excavated Waste Materials and Working Piles

Excavated waste materials and working piles include the active, or "working face" excavation during pit excavation, and/or materials in the process of being excavated from the waste pits, accumulated during processing, transported by equipment, loaded into railcars, crushed, blended, or fed into the dryer. Radon emissions from these materials and working piles are treated as intermittent fugitive sources and will be controlled by implementing BAT with no numerical emission rate limit. Potential BAT controls could include applying water or a dust suppressant over the residues, or work practices to minimize handling, disturbances or time exposed. For working piles with extended retention times, more stringent BAT techniques may need to be implemented such as covering the piles with a tarp or building a ventilated temporary structure with controls over the piles (BAT to control radon emissions from such a structure would be satisfied by including carbon beds with the ventilation system).

J.4.2.2.4 Compliance Demonstration

Radiological sources associated with the Operable Unit 1 remedial action will be evaluated against the substantive requirements of the NESHAP Subpart H Standard. Continuous monitoring and fugitive emission estimated will be used to measure off-site receptor doses. Specific substantive permitting requirements for air contaminant sources associated with the Operable Unit 1 remedial action are listed in Table 1 of this Attachment.

J.4.2.3 Substantive Permitting Requirements for Wastewater and Stormwater Discharges

J.4.2.3.1 Applicability of NPDES Permit Program

Section 402 of the Clean Water Act (CWA) establishes the NPDES permit program. The program is implemented in accordance with regulations promulgated in 40 CFR Part 122 through 136 which regulate the point source discharge of wastewater to waters of the United States through the issuance of NPDES permits. NPDES permits are designed to specify discharge limitations necessary to comply with applicable technology-based effluent standards and/or water quality-based standards. NPDES permit typically include monitoring requirements and additional conditions regulating point source discharges. Discharges of stormwater from specific types of activities have also been included under the NPDES permit program. Authority for administering the NPDES permit program within the State of Ohio has been delegated to Ohio EPA.

J.4.2.3.2 NPDES Permitting Requirements

The DOE, the U.S. EPA and Ohio EPA have agreed that off-site discharges of process wastewater and stormwater generated during the course of CERCLA remedial actions will be subject to compliance with the both the substantive and administrative provisions of Ohio EPA's NPDES permit program. OU1 discharges will be treated within the FEMP wastewater treatment system prior to discharge to the Great Miami River. Surge capacity and primary settling of Operable Unit 1 wastewaters will be provided at the Biodenitrification Surge Lagoon. Final treatment of Operable Unit 1 process wastewaters will be provided at the Advanced Wastewater Treatment facility (AWWT). Process wastewaters will be produced during initial de-watering of Waste Pits 5, 6 and the Clearwell, waste excavation and handling operations, and dryer operations. Stormwater runoff currently being collected in the waste pit area will also continue to be processed through the existing wastewater treatment system via the waste pit stormwater collection system.

A new industrial stormwater outfall to Paddy's Run will also established during implementation of the Operable Unit 1 remedial action. Discharges from this outfall will be comprised of overflows from the new stormwater management basin that will be used to collect stormwater runoff for the waste processing area. Establishment of this outfall constitutes a new point source discharge of industrial stormwater, and as such is subject to the provisions of Ohio EPA's NPDES permit program.

Activities could also involve the processing of standing water from Pits 5 and 6 through the Clearwell during the initial dewatering of these pits prior to excavation. Under the 1987 Director's Findings and Orders, use of the Clearwell in this manner is prohibited; however, the DOE has requested and approval has been received from the Ohio EPA by letter of March 1, 1996, to use the Clearwell for such remediation activities.

Process wastewater and stormwater discharges associated with the Operable Unit 1 remedial action will be treated at the AWWT to ensure compliance with the terms and conditions of the existing NPDES permit. By permit condition, DOE is required to notify OEPA of any activities or changes at the site which have the potential to significantly alter the character of the wastewater streams being discharged under its existing NPDES permit. A NPDES permit modification is required if the discharge is deemed significant enough to cause a change in the

character of the wastewater stream. Based on a preliminary evaluation of the process wastewater discharges associated with the Operable Unit 1 remedial action, DOE has determined that they are of significant nature to warrant an NPDES permit modification. The existing FEMP NPDES permit would therefore need to be updated through the normal modification and/or renewal processes to reflect process wastewater discharges associated with the Operable Unit 1 remedial action. The existing NPDES permit will also be modified to reflect the addition of the new industrial stormwater outfall to Paddy's Run Creek. Construction related stormwater runoff will continue to be managed in accordance with the requirements of the existing FEMP NPDES permit and Stormwater Pollution Prevention Plan.

J.4.2.3.3 Compliance Demonstration

DOE and U.S. and Ohio EPAs have agreed that off-site wastewater discharges associated with the AWWT, and any other point-source wastewater or stormwater discharges to the Great Miami River or Paddys Run Creek will continue to be permitted through the NPDES modification and renewal processes. In order to comply with the requirements of this agreement, the existing FEMP NPDES permit will be renewed and/or modified to reflect process wastewater and stormwater discharges associated with the Operable Unit 1 remedial action. Table 2 of this Attachment describes NPDES related permitting requirements associated with the Operable Unit 1 remedial action.

J.4.2.4 Substantive RCRA Permitting Requirements

J.4.2.4.1 Applicability of RCRA Permit Program

Subtitle C of the Resource Conservation and Recovery Act (RCRA) requires all hazardous waste treatment, storage, or disposal facilities (TSDs) to obtain RCRA Part A and B permits. The Part A permit includes basic information about the TSD facility, such as its name, location, and types of activities performed at the facility. Part B permits require detailed information about the TSD facilities including the types of wastes to be handled, groundwater monitoring plans, and facility design information. These permit requirements are established in 40 CFR Part 270 and reflect the requirements of 40 CFR Part 264. The administration of the RCRA permitting process has been delegated to Ohio EPA in the State of Ohio. The general state implemented RCRA permit requirements are equivalent to the Federal RCRA permitting requirements promulgated in OAC 3745-50.

J.4.2.4.2 Substantive RCRA Permitting Requirements Associated with the Operable Unit 1 Selected Remedy

The FEMP submitted a RCRA Part B Permit Application to OEPA in October 1991 in accordance with its stipulated amended Consent Decree with Ohio EPA. Therefore, the substantive permitting requirements mandated under the RCRA Part B permit are applicable to remedial actions conducted at the site that involve the treatment, storage, and disposal of hazardous wastes.

Of the Clearwell, Burn Pit and six waste pits located within the Operable Unit 1 boundary, only Waste Pits 4 and 5 are currently listed as hazardous waste management units. However, analytical testing of material from these pits does not support the position that pit wastes are hazardous under existing RCRA regulations, nor does it indicate the presence of RCRA

characteristic wastes throughout the remaining waste pits. Regardless, waste pit material must be tested to determine if it exhibits RCRA characteristics prior to shipment off-site. In the event RCRA characteristic wastes are identified, they must be managed in accordance with the substantive requirements of the FEMP RCRA Part B permit and corresponding RCRA ARARs.

In addition, the Draft Director's Findings and Orders between Ohio EPA and DOE specify that demonstration of compliance with substantive closure and post-closure requirements for hazardous waste management units will be documented in the remedial design and remedial action deliverables.

J.4.2.4.3 Compliance Demonstration

Excavation, size reduction, homogenization, blending, and drying of Operable Unit 1 pit wastes will be conducted to produce of a single waste stream that will subsequently be shipped off-site for disposal at a permitted commercial disposal facility (PCDF). Prior to shipment off-site, this wastes will be tested to determine if they meet the PCDF's waste acceptance criteria. If, during waste acceptance criteria testing, RCRA characteristic wastes are identified, the waste will be packaged and shipped to a low-level disposal facility that is also capable of treating and disposing of these types of RCRA wastes. The off-site shipment of RCRA wastes will be conducted in accordance with Department of Transportation and RCRA requirements.

Substantive RCRA permitting requirements and hazardous management unit closure and post-closure requirements associated with the Operable Unit 1 remedial action are addressed in Table 3 of this Attachment.

J.4.2.5 Substantive Permitting Requirements Associated with Discharges of Dredged and Fill Material Into Wetlands and Waters of the United States

J.4.2.5.1 Applicability of Clean Water Act Section 404 and 401 Wetland Permit Programs

Pursuant to Section 404 of the Clean Water Act (CWA), any activity that results in the discharge of dredge or fill material into waters of the United States, including wetlands requires permit authorization by the United States Army Corps of Engineers (ACOE). The ACOE authorizes dredge and fill activities within wetlands and other waters of the United States through the issuance of permits under its Nationwide or Individual Permit Programs (33 CFR Parts 330 and 323, respectively). In instances were discharges of dredge and fill material are associated with CERCLA removal and remedial actions, the ACOE has delegated responsibility for ensuring discharges are conducted in accordance with Sections 404 and 401 of the CWA to U.S. EPA.

In addition to the federally enforceable permitting requirements mandated under Section 404 of the CWA, individual States are delegated responsibility for ensuring discharges of dredged or fill material conducted within their borders compliance with the requirements of Section 401 of the CWA. In Ohio, the Section 401 State Water Quality Certification program is administered by Ohio EPA pursuant to OAC 3745-32.

J.4.2.5.2 Substantive Permitting Requirements Associated with the Operable Unit 1 Selected Remedy

Impacts to wetlands and waters of the United States were considered during selection of the Operable Unit 1 selected remedy as documented in the Operable Unit 1 ROD. Although DOE has avoided and minimized wetland impacts to the maximum extent practicable during its remedial design efforts, approximately 4.96 acres of headwaters and isolated jurisdictional wetlands will be dredged and/or filled as a result of the Operable Unit One remedial action. Because the Operable Unit 1 remedial action will result in the dredging and filling of these jurisdictional wetlands, the substantive permitting requirements mandated under the implementing regulations of the CWA Section 404 and 401 permit programs are applicable to the Operable Unit 1 remedial action.

Based upon review of ACOE Nationwide Permits promulgated in Appendix A to 33 CFR Part 330, DOE has determined that impacts associated with the Operable Unit 1 remedial action meet the substantive terms and conditions of Nationwide Permit 26 - *"Headwaters and Isolated Waters Discharges"* and therefore, would have been authorized under this Nationwide Permit in absence of the CERCLA Section 121(e) exemption. Ohio EPA granted its corresponding Section 401 State Water Quality Certification for Nationwide Permit 26 on January 17, 1992.

The specific terms and conditions of Nationwide Permit 26 that must be followed for discharges to be authorized under the Nationwide permit are promulgated in Appendix A to 33 CFR Part 330. Of these, only those requirements which are deemed substantive in nature (i.e., non-administrative) are considered applicable to the Operable Unit 1 remedial action. Substantive permitting requirements mandated under Ohio EPA's corresponding Section 401 State Water Quality Certification are limited to restrictions on the acreage of dredge and fill activities and on discharges to special aquatic areas such as bogs and fens. The substantive permitting requirements of Nationwide Permit 26 and its corresponding Section 401 State Water Quality Certification that are applicable to the Operable Unit 1 remedial action are presented in Table 4.

J.4.2.5.3 Compliance Demonstration

The unavoidable 4.96 acre impact that will result from the OU1 remedial action will be conducted in accordance with the substantive requirements of Nationwide Permit 26 and its corresponding Section 401 State Water Quality Certification, including soil and erosion control and wetland mitigation. To avoid a piece-meal approach to mitigation, wetland impacts will be mitigated on a site-wide basis. Documentation addressing how specific mitigatory requirements will be addressed will be submitted pursuant to the schedule established in the Operable Unit 5 Remedial Design Work Plan.

J.4.2.6 Compliance with Non-Permit Related ARARS

Operable Unit 1 remedial actions must also comply with non-permit related ARARs established under existing federal, state, and local environmental regulations. Tables describing the requirements of these ARARs are included in Attachment J.4.1.

TABLE 1
SUBSTANTIVE PERMITTING REQUIREMENTS FOR AIR CONTAMINANT SOURCES

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
		Substantive Air Permits - Dryer		
Permits to Install New Sources of Emissions OAC 3745-31-05(A)	The director shall issue a permit to install if he determines that the installation or modification and operation of an air contaminant source will: • Not prevent or interfere with the attainment or maintenance of applicable ambient air quality standards; • Not result in a violation of any applicable air pollution control laws; and • Employ best available technology to control emissions.	Permits to Install would be required for facilities such as a fueling station, rotary dryer, and gas furnace in absence of the CERCLA 121 (e) permitting exemption. These sources will be installed such that they do not interfere with the attainment or maintenance of any applicable air quality standards or cause a violation of applicable air control laws. BAT will be employed to control both point source and fugitive emissions associated with the project. BAT for particulate radionuclides emissions shall be HEPA Filtration with differential pressure gauge and low differential pressure alarm to be installed on the dryer off-gas system.		
Particulate Matter Standards OAC 3745-17-07	Visible particulate emissions from any stack may exceed twenty percent opacity, as a six minute average, for not more than six consecutive minutes in any sixty minutes, but shall not exceed sixty percent opacity, as a six minute average, at any time.	BAT shall mean that visible emissions of particulate shall not exceed zero (0%) percent opacity from the discharge stack of any control device associated with this source excluding water vapor.		

TABLE 1
SUBSTANTIVE PERMITTING REQUIREMENTS FOR AIR CONTAMINANT SOURCES (CONTINUED)

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
		Substantive Air Permits - Dryer		
National Emission Standards for Hazardous Air Pollutants (NESHAP) - 40 CFR Part 61, Subpart H - Emissions of Radionuclides Other Than Radon From DOE Facilities 40 CFR 61.90 and 40 CFR 61.96(b) and 40 CFR 61.92 (DOE 5400.5) and 40 CFR 61.93(b)	An application for approval does not have to be filed for radionuclide sources if the effective dose equivalent caused by all emissions from the new construction or modification is less than 0.1 mrem per year. Radiological emissions (except radon-222 and radon-220) to the ambient air from DOE facilities shall not exceed those amounts that would cause any member of the public to receive an effective dose equivalent of 10 mrem in any one year. Continuous emission monitoring is required for stacks and vents that have the potential, under normal operating conditions, but without emission control release radionuclides in sufficient quantities to cause any member of the general public to receive an effective dose equivalent of 0.1 mrem/year or greater.	HEPA filtration is BAT for radionuclide emissions and shall be installed to minimize radiological emissions to the ambient air and the contribution to the effective dose equivalent to any member of the public from the dryer stack. If determined to be necessary, based on modelling of radionuclide emissions to the site boundary, a continuous stack monitor shall be operated when radionuclide emissions are exhausted through the stack. The monitoring system shall have an isokinetic sampler designed and built in accordance with 40 CFR 61.93. The sampler shall include a radiation monitor with a high radiation alarm.		

TABLE 1
SUBSTANTIVE PERMITTING REQUIREMENTS FOR AIR CONTAMINANT SOURCES (CONTINUED)

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
		Substantive Air Permits - Dryer		
Radon Emissions 40 CFR 192, Subpart A	Radon emissions from the dryer or other point sources shall meet a stack limit based on a maximum allowable off-site impact of 0.5 pCi/l annual average for each point source. This limit is based on 40 CFR 192, Subpart A. Although this limit is not directly applicable to point sources, applying to the impact from restored sites and not sites under remediation, it is being identified as a relevant and appropriate limit. To calculate the stack limit for a point source, EPA-approved dispersion modeling shall be used.			
Ohio EPA Air Toxics Policy	The current PTI regulations provide the Director of OEPA with a mechanism to require the evaluation of toxic air contaminants from new sources. The OEPA Air Toxics Policy provides a mechanism for calculating the Maximum Acceptable Ground-Level Concentration (MAGLC) for a toxic substance. This value at the site boundary will be modeled to the stack to determine a stack limit. All toxic compounds that will exceed the stack limit shall be controlled administratively or by BAT to lower emissions to below the calculated stack limit.	For toxic compound emissions that were calculated to exceed the established stack limit, administrative controls shall be implemented or emissions shall be controlled by implementing BAT for toxic emissions. BAT for toxic emissions shall be throughput/materials restrictions or carbon beds for organic, caustic scrubbers for acidic fumes, or condenser for organic and acidic fumes. Performance of these control measures will be verified through performance testing during initial operation.		

TABLE 1
SUBSTANTIVE PERMITTING REQUIREMENTS FOR AIR CONTAMINANT SOURCES (CONTINUED)

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
		Substantive Air Permits - Dryer		
Air Emission Standards for Process Vents 40 CFR 264.1030-264.1036	Reduced total organic emissions below 1.4 kg/h (3 lbs/hr) and 2.8 Mg/yr (3.1 tons/yr). Control device (condenser or absorber) must recover organic vapors with an efficiency of 95 percent or greater. No regulations have been promulgated for process vents associated with thermal drying, however, 40 CFR 264.1030-1036 will be relevant and appropriate but not applicable to air emission standards for process vents associated with thermal drying.	To control organic emissions, BAT shall be implemented. BAT for organic emissions shall be either carbon beds or condensers or administrative controls.		
Air Quality Standards 40 CFR 60.670 Subpart OOO	Stack emissions from affected facilities shall not: contain particulate matter in excess of 0.05 g/dscm; or exhibit greater than 7 percent opacity, unless the stack emissions are discharged from an affected facility using a wet scrubbing control device. These standards are relevant and appropriate since shredder and conveyor systems were identified in the Operable Unit 1 FS.	Shredder and conveyor systems will be enclosed with dust suppression system to meet this requirement. BAT for particulate radionuclides emissions shall be HEPA Filtration with differential pressure gauge and low differential pressure alarm to be installed on the dryer off-gas system.		

TABLE 1
SUBSTANTIVE PERMITTING REQUIREMENTS FOR AIR CONTAMINANT SOURCES (CONTINUED)

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Substantive Air Permits - Dryer				
Air Quality Standards OAC 3745-21-07(G)(2)	Emissions of photochemical reactive material from processes, including drying, not to exceed 40 lbs/day, with a peak of 8 lbs/hour.	BAT shall be implemented to control organic emissions. BAT for organic emissions shall be either administrative controls or installing carbon beds or a condenser.		
Air Quality Standards OAC 3745-21-02(C) and OAC 3745-21-03(D)	This requirement covers ambient air quality standards, guidelines, and methods of ambient air quality measurements for non-methane hydrocarbons. Mean ambient concentration of non-methane hydrocarbons not to exceed 160 micrograms/cubic meters (0.24 ppm as carbon) between 6 and 9 a.m.; methods for determining ambient concentration of non-methane hydrocarbons.	During drying, hydrocarbon soil contaminants may be evolved with the steam. An uncontrolled release could lead to a violation of this standard. BAT shall be implemented to control non-methane hydrocarbon emissions. BAT to reduce non-methane hydrocarbon emissions shall be either administrative controls or installing carbon beds or a condenser. Compliance to this standard shall be demonstrated using EPA-approved air modeling.		

TABLE 1
SUBSTANTIVE PERMITTING REQUIREMENTS FOR AIR CONTAMINANT SOURCES (CONTINUED)

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
		Substantive Air Permits - Dryer		
General Provisions on Air Pollution Control OAC 3745-15-07(A)	Emission of any substance into the air in such a manner or in such amounts as to endanger the health, safety or welfare of the public, or cause unreasonable injury or damage to property, is hereby found and declared a public nuisance. It shall be unlawful for any person to cause, permit, or maintain any such public nuisance.	Potential emissions from the dryer shall be evaluated during the design phase. Emissions shall be controlled using BAT either administratively or installing BAT control equipment.		
Nitrogen Oxide Standards OAC 3745-23-06(B)	Except as otherwise provided in these regulations, all stationary nitrogen oxide emission sources shall minimize nitrogen oxide emission by use of the latest available control techniques and operating practices in accordance with best current technology.	To minimize nitrogen oxide emissions, the dryer shall be equipped with low NOx burners which is considered BAT for gas-fired burners.		

TABLE 1
SUBSTANTIVE PERMITTING REQUIREMENTS FOR AIR CONTAMINANT SOURCES (CONTINUED)

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Excavated Working Materials - Materials Being Excavated, Transported, Stored, or Blended				
Permits to Install New Sources of Emissions OAC 3745-31-05(A)	The director shall issue a permit to install if he determines that the installation or modification and operation of an air contaminant source will: • Not prevent or interfere with the attainment or maintenance of applicable ambient air quality standards; • Not result in a violation of any applicable air pollution control laws; and • Employ best available technology to control emissions.	Permits to Install would be required for facilities such as a fueling station, rotary dryer, and gas furnace in absence of the CERCLA 121 (e) permitting exemption. These sources will be installed such that they do not interfere with the attainment or maintenance of any applicable air quality standards or cause a violation of applicable air control laws. BAT will be employed to control both point source and fugitive emissions associated with the project.		
Radon Emissions	Radon emissions from excavated working materials are intermittent fugitive sources and will be controlled by implementing BAT with no numerical emission rate limit. This policy is described in greater detail in Section J.4.2.2.3 of this Attachment.	BAT control for radon emissions from excavated working materials can be, but are not limited to, applying water or a dust suppressant over the residues, or work practices to minimize handling, disturbances or time exposed. For storage piles that will be stored for an extended period of time, more stringent BAT controls shall be implemented such as applying tarps or building a ventilated temporary structure with controls such as carbon beds.		

TABLE 1
SUBSTANTIVE PERMITTING REQUIREMENTS FOR AIR CONTAMINANT SOURCES (CONTINUED)

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Excavated Working Materials - Materials Being Excavated, Transported, Stored, or Blended				
General Provisions on Air Pollution Control OAC 3745-15-07 (A)	Emission of any substance into the air in such a manner or in such amounts as to endanger the health, safety or welfare of the public, or cause unreasonable injury or damage to property, is hereby found and declared a public nuisance. It shall be unlawful for any person to cause, permit, or maintain any such public nuisance.	Fugitive emissions shall be controlled using BAT. See OAC 3745-17-07(B) and OAC 3745-17-8 (B).		

TABLE 1
SUBSTANTIVE PERMITTING REQUIREMENTS FOR AIR CONTAMINANT SOURCES (CONTINUED)

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Excavated Working Materials - Materials Being Excavated, Transported, Stored, or Blended				
Particulate Matter Standards OAC 3745-17-07(B) and OAC 3745-17-8 (B)	Visible particulate emissions from any fugitive dust source shall not exceed twenty percent opacity as a three-minute average except: a) There shall be no visible particulate emissions from any paved roadway or parking area except for a period of time not to exceed six minutes during any sixty-minute observation period. b) There shall be no visible particulate emissions from any unpaved roadway or parking area except for a period of time not to exceed thirteen minutes during any sixty-minute observation period. c) There shall be no visible particulate emissions from any material storage piles except for a period of time not to exceed thirteen minutes during any sixty-minute observation period.	No person shall cause or permit any fugitive dust source to be operated; or any materials to be handled, transported, or stored; or a building or its appurtenances or a road to be used, without taking or installing reasonably available control measures to prevent fugitive dust from becoming airborne. Such reasonably available control measures shall include, but not limited to, one or more of the following which are appropriate to minimize or eliminate visible particulate emissions of fugitive dust: 1) The use of water or other suitable dust suppression chemicals for the control of fugitive dust from demolition of existing buildings or structures, constructions operations, the grading of roads or clearing land; 2) The periodic application of asphalt, water, or other suitable dust suppression chemicals on dirt or gravel roads and parking lots, and other surfaces which can cause emissions of fugitive dust; suitable coverings; 3) The periodic application of water or other suitable dust suppression chemicals, the installation of storage silos, bins, or other enclosed structures, or the use of canvas or other suitable coverings, for all materials stockpiles and stockpiling operations; 4) The covering, at all times, of open bodied vehicles when transporting materials likely to become airborne; 5) The paving of roadways and the maintaining of roadways in a clean condition. Fugitive sources can also be controlled through work practices such as minimize handling, disturbances, or time exposed of the residues. For contingency materials that will be stored for an extended period of time, more stringent BAT controls shall be implemented such as applying tarps or building a ventilated temporary structure with BAT controls such as HEPA filtration.		

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TABLE 1
SUBSTANTIVE PERMITTING REQUIREMENTS FOR AIR CONTAMINANT SOURCES (CONTINUED)

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
		Waste Pits		
National Emission standards for Air Pollutants (NESHAP) - 40 CFR 61, Subpart Q - Emissions of Radon From Department of Energy Facilities	No source at a DOE facility shall emit more than 20 pCi/m^2/sec of radon-222 as an average for the entire source, into the air. Source means any building, structure, pile, impoundment or area used for interim storage or disposal that is or contains waste material containing radium in sufficient concentration to emit radon-222 in excess of this standard prior to remedial action.			

TABLE 2
NPDES PERMITTING REQUIREMENTS

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
		Ohio EPA Permit No. 1IO00004*ED		
Ohio EPA NPDES Permit No. 1I00004*ED	Wastewater discharges associate with the Operable Unit 1 remedial action must be treated to ensure compliance with the terms and conditions of the FEMP NPDES permit. DOE is required to notify OEPA of any activities or changes at the site which have the potential to significantly alter the character of the wastewater streams being discharged under its existing NPDES permit. A NPDES permit modification is required if the discharge is deemed significant enough to cause a change in the character of the wastewater stream. The existing NPDES permit must also be modified to reflect the addition on any new point source discharges of process wastewaters or stormwaters. Construction related stormwater runoff must be managed in accordance with the requirements of the existing FEMP NPDES permit and Stormwater Pollution Prevention Plan.	Wastewater discharges associated with the Operable Unit 1 remedial action will be treated to ensure compliance with NPDES permit requirements. The existing NPDES permit will be modified and/or renewed to reflect process wastewater discharges and to incorporate the addition of the new industrial stormwater outfall to Paddy's Run Creek. Construction related stormwater runoff will continue to be managed in accordance with the requirements of the existing FEMP NPDES permit and Stormwater Pollution Prevention Plan.		

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TABLE 3
RCRA SUBSTANTIVE PERMITTING REQUIREMENTS

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
RCRA Substantive Permitting Requirements				
Hazardous Waste Determinations 40 CFR 262.11 (OAC 3745-52-11)	Generators of wastes must determine whether or not these wastes are hazardous in accordance with the requirements of this rule.	Excavation, size reduction, homogenization, blending, and drying of pit wastes will result in the production of a single waste stream that will subsequently be shipped off-site by railcar for disposal at a commercially permit disposal facility. Representative samples from each railcar will be sampled to ensure they meet regulatory and disposal facility waste acceptance criteria. As documented in the Operable Unit 1 FS/PP and ROD, this waste stream does not contain RCRA listed wastes and therefore, samples will be analyzed for RCRA characteristics only in accordance with the requirements of 40 CFR 262.11 and OAC 3745-52-11. If analytical results indicate the waste exhibits RCRA hazardous characteristics, the railcar will be shipped to a permitted commercial disposal facility for treatment and disposal as hazardous waste.		
Preparing and Transporting Hazardous Waste Off-site. 40 CFR 262.20 through 262.33 and 40 CFR 263.20 (OAC 3745-52-20 through 33 and OAC 3745-52-40 and OAC 3745-52-42)	Any generator who transports hazardous waste for off-site treatment, storage, or disposal must originate and follow-up the manifest for off-site shipments. Pre-transporting requirements include appropriate packaging, labeling, marking, and placarding.	If analytical results indicate the waste exhibits RCRA hazardous characteristics, the railcar will be shipped to a permitted commercial disposal facility for treatment and disposal as hazardous waste in accordance with the provisions of these regulations.		

TABLE 3
RCRA SUBSTANTIVE PERMITTING REQUIREMENTS (CONTINUED)

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
		RCRA Substantive Permitting Requirements		
Closure 40 CFR 264, Subpart G (OAC 3745-55-11 through 16)	Owner and/or operators must close facilities in a manner that: • Minimizes the need for further maintenance • Minimizes post-closure escape of hazardous constituents • Complies with specific unit type closure requirements	Hazardous waste management units located within the Operable Unit 1 boundary will be closed in accordance with the substantive provisions of these requirements during the Operable Unit 1 remedial process. As documented in the Draft Director's Final Findings and Orders between DOE and Ohio EPA, demonstration of compliance with substantive closure and post-closure requirements for hazardous waste management units will be documented in the various remedial design and remedial action documents developed for this project.		
Post-Closure 40 CFR 264 Subpart G 40 CFR 264.117 and 40 CFR 264.119 (OAC 3745-55-17 and OAC 3745-55-19)	Post-closure care and use of property for a period as necessary to protect human health and the environment including: • Access controls • Monitoring Post-closure notices must include deed notation/use restriction.	Post-closure care will be provided in accordance with the substantive provisions of these requirements during the Operable Unit 1 remedial process. As documented in the Draft Director's Final Findings and Orders between DOE and Ohio EPA, demonstration of compliance with substantive closure and post-closure requirements for hazardous waste management units will be documented in the various remedial design and remedial action documents developed for this project.		

TABLE 3
RCRA SUBSTANTIVE PERMITTING REQUIREMENTS (CONTINUED)

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
		RCRA Substantive Permitting Requirements		
Waste Piles OAC 3745-56-51, 54, and 58	These requirements specify design and operating requirements, monitoring, and inspection, closure and post-closure care. Specific substantive requirements include: • Run-on/run-off control systems must be designed and installed to prevent flow onto or runoff from the active pile during peak flows from a 25-year, 24-hour storm event. • Collection and hold facilities associated with run-on/run-off control systems must be emptied after storms. • Piles must be covered or otherwise managed to prevent wind dispersion. • Waste piles must be inspected weekly and after storms to ensure the integrity of run-on and run-off controls. • At closure, owners must remove or decontaminate all waste residues, contaminated system components, contaminated subsoils and structures, and equipment contaminated with waste and leachate, and manage as hazardous waste.	Waste piles generated during the course of the project will be managed in accordance with the substantive provisions of these requirements. Upon completion of remedial activities, the processing facility will be remediated to remove all processing facilities and residual contamination consistent with established remedial levels.		

TABLE 4
CWA SECTION 404 AND 401 SUBSTANTIVE WETLAND PERMITTING REQUIREMENTS

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Nationwide Permit 26 - Substantive Permitting Requirements				
Nationwide Permits 33 CFR Part 330, Appendix A	Discharges of dredged and fill material associated with the Operable Unit 1 remedial action shall not exceed 10 acres or more of total disturbance.	Discharges of dredged or fill material associated with the Operable Unit 1 remedial action total approximately 4.96 acres.		
	No activity may cause more than a minimal adverse effect on navigation.	Discharges will be conducted within isolated and headwater wetlands and therefore, will have no adverse impacts on navigation.		
	Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.	Fill material will be maintained and stabilized upon completion of remedial activities. Public access to the Operable Unit 1 area of the site is restricted to site personnel, via the existing site security system.		
	Appropriate erosion control and siltation controls must be used and maintained in effective operating condition during construction, and all exposed soil or other fills must be permanently stabilized at the earliest practicable date.	Appropriate erosion control and siltation devices will be installed and maintained to minimize solids loadings to wetlands and Paddys Run. Erosion and siltation control devices will be design in accordance with the applicable requirements of USDA's Water Management and Sedimentation Control Manual for Urbanizing Areas and the provisions of the current FEMP Stormwater Pollution Prevention Plan.		

TABLE 4
CWA SECTION 404 AND 401 SUBSTANTIVE WETLAND PERMITTING REQUIREMENTS (CONTINUED)

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Nationwide Permit 26 - Substantive Permitting Requirements				
Nationwide Permits 33 CFR Part 330, Appendix A	No activity may substantially disrupt the movement of those species of aquatic life indigenous to the waterbody, including those species which normally migrate through the area, unless the activity's primary purpose is to impound water.	Discharges of dredge and fill material will be conducted with headwater and isolated wetland systems and therefore, will not substantially disrupt the movement of any indigenous aquatic species.		
	Heavy equipment working in wetlands must be placed on mats or other measures must be taken to minimize soil disturbance.	Appropriate measures will be taken to ensure impacts from heavy equipment operating in wetlands will be avoided or minimized to the maximum extent practicable.		
	No activity is authorized under any Nationwide Permit which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified in the Federal Endangered Species Act, or which is likely to destroy or adversely modify the critical habitat of such species.	No known federally listed or proposed threatened or endangered species will be impacted by dredge and fill activities conducted in support of the Operable Unit 1 remedial action.		
	No activity which may adversely affect historic properties listed, or eligible for listing, in the National Register of Historic properties is authorized.	No known listed or potential eligible historic properties will be impacted by the Operable Unit 1 remedial action.		

TABLE 4
CWA SECTION 404 AND 401 SUBSTANTIVE WETLAND PERMITTING REQUIREMENTS (CONTINUED)

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Nationwide Permit 26 - Substantive Permitting Requirements				
Nationwide Permits 33 CFR Part 330, Appendix A	A wetland delineation is required to define the areal extent of impacts to wetland areas. Wetland delineations must be prepared in accordance with the current method required by the ACOE.	A site-wide jurisdictional wetland delineation was conducted using the ACOE 1987 Wetland Delineation manual and was subsequently approved by the ACOE in 1993. This delineation has served as the basis for defining wetland impacts associated with remedial activities at the FEMP site.		
	No discharge of dredged or fill material may occur in the proximity of a public water supply intake except where the discharge is for repair of the public water supply intake structures or adjacent bank stabilization.	No known public water supply intake structures existing within a 1000 foot radius of proposed Operable Unit 1 discharges.		
	No discharge of dredged or fill material may consist of unsuitable material (e.g. trash, debris, car bodies, etc.) and material discharged must be free from toxic pollutants in toxic amount (see section 307 of the Clean Water Act).	Fill material associated with Operable Unit 1 fill activities will consist of suitable material. Clean backfill will be used during stabilization of the Operable Unit 1 area upon completion of remedial activities.		
	Discharges of dredged or fill material into waters of the United States must be minimized or avoided to the maximum extent practicable at the project site. A compensatory mitigation plan defining the manner in which adverse impacts will be compensated for may be required.	Although DOE has avoided and minimized impacts to wetlands and waters of the United State through the remedial design process, approximately 4.96 acres of unavoidable adverse wetland impacts will be associated with the Operable Unit remedial action. Impacts to these areas will be mitigated at a 1 to 1.5 acre ration in accordance with the Site-wide Wetland Mitigation Plan currently being prepared under the Operable Unit 5 Remedial Design process.		

TABLE 4
CWA SECTION 404 AND 401 SUBSTANTIVE WETLAND PERMITTING REQUIREMENTS (CONTINUED)

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Nationwide Permit 26 - Substantive Permitting Requirements				
Nationwide Permits 33 CFR Part 330, Appendix A	To the maximum extent practicable, discharges must not permanently restrict or impede the passage of normal or expected high flows or cause the relocation of waters unless the primary purpose of the fill is to impound waters.	Discharges associated with the Operable Unit 1 remedial action will not adversely affect normal or anticipated high flows within those drainage basins which are contained within the Operable Unit 1 boundary.		
	If the discharge creates an impoundment of water, adverse impact on the aquatic system caused by the accelerated passage of water and/or the restriction of its flow shall be minimized to the maximum extent practicable.	Discharges of dredged or fill material associated with the Operable Unit 1 remedial action will not result in the impoundment of water within wetland areas located within the Operable Unit 1 boundary.		
	Discharges into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.	Proposed discharges of dredge and fill material will not occur with migratory waterfowl breeding areas.		
	Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.	Temporary fills will be removed upon completion of remedial activities and the Operable Unit 1 will be stabilized in accordance with the requirements of the grading plan prepared as part of this design package.		

TABLE 4
CWA SECTION 404 AND 401 SUBSTANTIVE WETLAND PERMITTING REQUIREMENTS (CONTINUED)

Citation	Substantive Permitting Requirements	Requirements Assessment	Compliance Strategy	Cross Reference Index
Section 401 State Water Quality Certification - Substantive Permitting Requirements				
Section 401 Water Quality Certifications OAC 3745-32	Discharges of dredged or fill material are limited to a total disturbance of five (5) acres or less.	While Nationwide Permit 26 allows for a maximum disturbance of 10 acres, Ohio EPA has restricted the total allowable acreage authorized under the Nationwide Permit to 5 acres under its corresponding Section 401 State Water Quality Certification. The Operable Unit 1 remedial action will result in a total impact of 4.67 acres and therefore, this impact is in compliance with this substantive requirement.		
	Discharges of dredged or fill material are precluded from occurring in special aquatic sites such as bogs and fens.	The wetland systems located within the Operable Unit 1 boundary do not meet the technical definition of bogs or fens as established in the 401 State Water Quality Certification.		

Attachment J.4.3
Disposition of Construction Wastes
in Radiological Controlled and Radiological Contamination Areas

ATTACHMENT J.4.3
DISPOSITION OF CONSTRUCTION WASTES
IN RADIOLOGICAL CONTROLLED AND RADIOLOGICAL CONTAMINATION AREAS

J.4.3.1 Radiological Contamination Area

As discussed in Section C.5.1.2.2, the waste pit area consists of three contaminated areas. It should be assumed that all construction materials and tools generated in this area will not be available for reuse in a radiological control area, and will therefore require storage and use in these contamination areas only. When materials and tools are no long needed in these areas, they will be boxed for disposal at NTS with the subcontractor incurring all disposal costs. FERMCO recommends any construction work proposed by the subcontractor in these contamination areas be first accompanied by activities associated with downposting the area to a radiologically controlled area per the Rad Control Manual.

J.4.3.2 Radiological Control Area

The subcontractor's work area, shown in Figure C.1-3, is a radiological controlled area (as discussed in C.5.1.2.2). All construction wastes entering this area shall follow the management and disposition requirement specified below.

J.4.3.2.1 Radiological Requirements Concerning the Management of New Construction Waste

Clean construction waste is defined as waste which is brought onto the FEMP by the subcontractor which, if properly handled, can be surveyed and released as a non-radioactive waste. Examples of this include packaging from new material or excess building material from a new construction site such as drywall, piping, insulation, etc.

NOTE: Materials which can not be properly surveyed for unrestricted release such as liquids, sand, gravel, etc. do not fall under the general guidelines of this procedure. Radiological Control should be contacted prior to these materials entering the controlled area to establish special controls if it is suspected that some material of this type may need to be free released from the site at a later date.

All items entering the radiological controlled areas of the site must be verified clean by radiological survey prior to unrestricted release. Since removal of waste from these areas can be difficult and time consuming, subcontractors are required to unpack equipment and material prior to entering the controlled area whenever possible. In addition, the minimum number of tools and equipment needed to complete the job should be brought into the controlled area. This practice reduces the amount of potentially contaminated waste and the amount of time spent monitoring trash and other items for unrestricted release into the uncontrolled area or into clean waste containers.

When appropriate, a lockable clean waste container shall be staged in the vicinity of the job site. This area should be set up with FERMCO Radiological Control to ensure background levels are low enough to permit free release radiological surveys in the area. A laydown area should be established near the container for staging of waste while it is awaiting survey. FERMCO Radiological Control must verify the lay down area is free of removable contamination prior to establishment to ensure the staged material will not become contaminated. Waste materials applicable to this procedure shall be monitored by FERMCO Radiological Control and loaded into

the container when it is verified that all applicable release criteria are met. Subcontractors should provide personnel as needed to handle the waste for the FERMCO Radiological Control Technicians (RCTs) during monitoring and to load the waste directly into the containers upon completion and release.

Trash should be surveyed and loaded on a frequent basis to prevent an excessive amount of trash piling up near the container. This frequency will vary depending on the amount of clean waste being generated on the project.

The subcontractor should supply a tarp, plastic or similar barrier to cover the waste material while it is awaiting survey. Material which is wet, muddy, or covered with snow and ice can not be properly surveyed for unrestricted release. An additional barrier may need to be established on the ground underneath the waste material. The RCT establishing the area should decide if this additional barrier is needed depending on the physical and radiological conditions of the lay down area.

The clean waste container shall be locked at all times while in the controlled area unless a RCT is present. FERMCO Radiological Control shall maintain the lock and key to all clean waste containers.

Radiological Control must survey the exterior surfaces of all waste containers prior to releasing the container from the radiological controlled area.

J.4.3.2.2 Unrestricted Release of Materials from Radiological Controlled Areas

All materials entering the controlled area are assumed radiologically contaminated until demonstrated otherwise. The amount of material entering the controlled area should be minimized; packaging materials should be removed prior to entering the area whenever possible. All materials, debris, and waste shall be surveyed by FERMCO RCTs prior to being released from the controlled area. Materials and equipment with surfaces inaccessible to surveying, e.g., pipes, motors, bulk material, rubble and chemicals, shall have a material release evaluation performed by FERMCO Radiological Control. Documentation is required to demonstrate materials were not exposed to radioactive material or cross contaminated while at the FEMP.

Contamination surveys are required immediately prior to release. If material is not released upon completion of survey (or end of shift) the material shall be stored in an uncontaminated container equipped with a tamper proof seal while awaiting release; RCTs shall have sole control of access to materials so stored. Materials not so controlled shall be resurveyed prior to release.

Concrete and coatings rubble are to be released for unrestricted use (off-site disposal) unless determined contaminated (or potentially contaminated) by FERMCO Radiological Control. All surfaces and equipment to be removed/demolished are to be isolated and surveyed by RCT prior to demolition. Rubble/debris is to be placed in a uncontaminated (as determined by RCT) container and controlled to prevent cross contamination. Waste shall be removed from the controlled area prior to end of shift or stored as indicated above. Rubble or any other waste to be released with potential contamination in volume is subject to review and approval/rejection by FERMCO Radiological Control. Any excess construction materials with potential contamination in volume, e.g., chemicals, blasting abrasives, is also subject to review for adequacy of contr

from cross contamination while in the controlled area. Alternate methods of controlling material to be released may be submitted in writing for approval by FERMCO Radiological Control.

Any materials or waste not releasable is to be contained and stored on site at a location determined by the FERMCO Technical Representative.

Attachment J.4.4

Permitted Commercial Disposal Facility Waste Acceptance Criteria

ATTACHMENT J.4.4

PERMITTED COMMERCIAL DISPOSAL FACILITY WASTE ACCEPTANCE CRITERIA

J.4.4.1 Specification

The Materials, as loaded into shipping conveyances, shall comply with the physical, chemical and radiological requirements of the selected PCDF's WAC as determined by the pre-shipment waste acceptance process.

J.4.4.2 Basis

Each of the following sections considers a specific **primary** license requirement of the PCDF and FERMCO's understanding of its applicability that must be addressed by each bidder. Analytical requirements for ascertaining compliance with the below-noted provisions are found in Section C.6.2.17.

The selected subcontractor is ultimately responsible for the waste's compliance with all (i.e., primary and applicable secondary provisions) of the selected PCDF's License.

J.4.4.3 Primary PCDF Performance Requirements

J.4.4.3.1 Physical Performance Requirements for Materials

(1) Free liquids:

(a) Conditions of PCDF Radioactive Material License:
Radioactive waste containing free liquid shall not be accepted for disposal.

(b) Supplementary information:
Sellers are advised that, particularly with a liner that will not allow the Materials to "breathe," it is possible for apparently as-loaded dry cargo to arrive at the PCDF with a layer of water that must be treated at substantial cost to the selected subcontractor.

(2) Moisture content:

(a) PCDF Moisture Content Requirements:
The PCDF has indicated that as-received dried waste, produced by the Subcontractor's waste treatment facility, shall have a moisture content within plus or minus five per cent of optimum moisture content as determined by the Standard Proctor test. Additionally, the PCDF imposes a minimum moisture content of about 5 to 7 per cent to minimize dust generation. This requirement is not known to be related to the PCDF's license, but is imposed to facilitate waste handling by the facility.

(b) Supplementary information:
During the winter (i.e., 1 December through 1 March), to offset the PCDF's loss of productivity due to receipt of frozen railcars, the subcontractor may

need to produce a drier product. Conversely, in the summer season, it is possible that less drying may be necessary.

(3) Amount of debris:

(a) Conditions of PCDF Radioactive Material License:
The PCDF's license defines debris as any radioactive waste other than soils. Compactable debris:

- Will pass through a 4-inch grizzly, and
- Has a density greater than 70 pounds per cubic foot.

Contaminated materials, other than soil, not meeting either of these criteria are defined as noncompactable debris.

The subcontractor is limited to less than 10 percent by volume of compactable debris uniformly distributed throughout soil like wastes. Noncompactable debris in the form of concrete, stone, or metal may be uniformly placed in soil like wastes up to 25 percent by volume.

(b) Supplementary information:
The subcontractor is only required to comply with these criteria as a whole for an entire unit train.

(4) Size of debris:

(a) Conditions of PCDF Radioactive Material License:
All debris shall be less than 10 inches in at least one dimension, and no longer than 8 feet in any other dimension.

(b) Supplementary information:
None.

J.4.4.3.2 Radiological Performance Requirements for Materials

(1) Specific radionuclides:

Multiple radionuclides:

The following radionuclides are commonly found at the FEMP:

- U-235.
- U-238.
- Th-230.
- Th-232.
- Th-234.

(a) Conditions of PCDF Radioactive Material License:
For a Material containing a mixture of radionuclides (e.g., A, B, and C), with respective concentrations (e.g., C_A, C_B, & C_C), having the Maximum Average Waste Concentrations (MAWC) noted in Table J.4.4-1, the following relationship (i.e., "the sum of the fractions") must be possible:

$$\frac{C_A}{MWC_A} + \frac{C_B}{MWC_B} + \frac{C_C}{MWC_C} \leq 1 \qquad (1)$$

(b) Supplementary information:
Radiological analyses, to date, show that homogenized, processed OU1 material will not exceed the maximum permitted average concentrations for all radionuclides.

The PCDF has agreed that initial waste acceptance for the depleted uranium portion of the Materials can be based upon the above-noted all-inclusive limit for depleted uranium instead of considering the individual contributions of all uranium isotopes. Thus, the subcontractor may wish to consider blending Materials that are very depleted with enriched Materials such that the resulting mixture qualifies as "depleted." Any non-uranium isotopes, if present, are included in the determination of the mixture's compliance with the WAC.

Waste shipments arriving at the site are checked for radiological parameters vis-a-vis the established acceptance criteria. For radiological parameters, the data from the total number of checked shipping conveyances are averaged. Thus, samples from some of the conveyances may be up to ten times higher than the acceptance criteria, provided that the average is within the limits of the Maximum Average Waste Concentration (MAWC).

(2) Special nuclear material:

(a) Condition of PCDF Radioactive Material License:
The maximum quantity of special nuclear material (SNM) which the PCDF may possess, undisposed of, at any one time shall not exceed: 350 grams of U-235, 200 grams of U-233, and 200 grams of Pu, or any combination of them in accordance with the following formula:

$$\frac{Grams\ U\text{-}235}{350} + \left[\frac{Grams\ U\text{-}233}{200}\right] + \left[\frac{Grams\ Pu}{200}\right] \leq 1 \qquad (2)$$

TABLE J.4.4-1 - PCDF RADIOLOGICAL ACCEPTANCE CRITERIA

Isotope	MAWC, pCi/g
Cesium-137	560[1]
Neptunium-237	2,000[2]
Plutonium-238	1,000
Plutonium-239	1,000
Plutonium-240	1,000
Potassium-40	1,000
Radium-226	2,000[1]
Radium-228 (5-years)	670
Ruthenium-106	19,000[1]
Strontium-90	20,000[1]
Technetium-99	100,000
Thorium-230	15,000
Thorium-232	680[1]
Uranium-234	37,000
Uranium-235	770
Uranium-236	36,000
Uranium-238	28,000[2]
Uranium-Depleted	110,000[2,3]

1 Decay products are assumed to be present in concentrations equal to parent.

2 Short lived decay product of U-239 (Th-234 and Pa-234) and of Np-237 (Pa-233) are assumed to be present in concentrations equal to the parent.

3 The representative PCDF has agreed that initial waste acceptance for the depleted uranium portion of the Materials can be based upon the above-noted all-inclusive limit for depleted uranium instead of considering the individual contributions of all uranium isotopes.

(b) Supplementary information:
This requirement is based upon **each** shipping conveyance; for this project, the shipping conveyance is considered each rail car. Although the limitation does not apply to the total SNM in all rail cars of the unit train, the PCDF **must** be notified in advance of the contents of the unit train in order to effectively manage its activities.

For determining compliance with this requirement, the following specific activity is to be used: 2.1×10^{-6} Ci per gram U-235. As the PCDF's license does not allow acceptance of U-233, the isotope is not a factor in the calculation. In addition, plutonium at levels exceeding the limits in Table J.4.4-1 will cause the SNM calculation to also be exceeded. Thus, if plutonium is not present, the maximum concentration of U-235 per gondola rail car may be expressed as follows:

$$\frac{350\ g\ U\text{-}235}{106.21\ tons\ of\ Material} \times \frac{ton}{2000\ lbs} \times \frac{lb}{453.6\ g} = \frac{3.6 \times 10^{-6}\ g\ U\text{-}235}{g\ Material} \qquad (3)$$

or

$$\frac{3.6 \times 10^{-6}\ grams\ U\text{-}235}{grams\ Material} \times \frac{2.1 \times 10^{-6}\ Ci}{gram\ U\text{-}235} = \frac{7.8 \times 10^{-12}\ Ci}{gram\ Material} \qquad (4)$$

This concentration of U-235 is only one per cent of the single component MAWC in Table J.4.4-1. The Subcontractor must comply with this limitation.

(4) Mixed radionuclides:

(a) Condition of PCDF Radioactive Material License:
The PCDF must not dispose of substances until it has been determined that the concentration of radionuclides is approximately uniform, except for debris superficially contaminated with radionuclides.

(b) Supplementary information:
To comply with the PCDF's license, the Subcontractor shall achieve approximately homogeneous concentrations of each radionuclide within each batch of Materials, subject to the maximum radionuclide-specific limitations in above-noted requirements (1), (2) and (3).

J.4.4.3.3 Chemical Performance Requirements for Materials

(1) Hazardous waste determination:

(a) Chemical analyses performed on the pit waste using the TCLP method indicates that the pits do not contain RCRA characteristic waste. Although FERMCO data suggest

that the pits do not contain hazardous waste, isolated pockets of hazardous substances may exist with concentrations that exceed the RCRA limits. The Subcontractor is responsible for characterizing the Materials in accordance with USEPA's hazardous waste regulations and the PCDF's WAC. For bidding purposes, characterization will be performed consistent with the requirements outlined in Sampling and Analysis Section C.6.2.17. Materials determined to be mixed wastes will be loaded into boxes as specified in the pit wastes section (Section C.5.1.2.2).

(2) Incoming-shipment acceptance parameters:

(a) In addition to all parameters noted in this Section, concentrations of the following parameters determined by acceptance testing of shipments must correspond to measurements taken from pre-shipment samples provided by the selected Seller:

- Photoionizer "sniffer"
- Air reactivity
- Water reactivity
- Paint filter liquid test or visual appearance
- Pyrophoricity
- Oxidizer/reducer
- Shock sensitivity.
- Solid/soil pH.
- Cyanide test.
- Sulfide test.

(3) Asbestos:

(a) Conditions of PCDF Radioactive Material License:
Wastes regulated as asbestos may not be accepted.

(b) Supplementary information:
Under the PCDF's license, waste regulated as asbestos may not be accepted. However, this requirement does not prohibit the facility from accepting radioactive waste with some asbestos contamination. Such waste may be accepted on a case by case basis. Although a small portion of OU1 waste may contain asbestos, the total is less than the regulatory threshold of one per cent. The Subcontractor shall verify that the Materials comply with these requirements.

(4) Polychlorinated biphenyls:

(a) Conditions of PCDF Radioactive Material License:
Polychlorinated biphenyl (PCB)-contaminated waste will not be accepted unless the PCB concentrations meet municipal solid waste disposal levels.

(b) Supplementary information:
FERMCO does not believe that the Materials do not exceed the 50 part per million (ppm) regulatory threshold. The Contractor shall verify that the Materials are compliant.

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(5) Chelating agents:

(a) Conditions of PCDF Radioactive Material License:
The Contractor is not permitted to use more than 0.1 per cent chelating agents by weight.

(b) Supplementary information:
None.

(6) Other:

(a) Conditions of PCDF Radioactive Material License:
The PCDF also prohibits the disposal of LLRW containing pathogens, infectious wastes, or other etiologic agents.

(b) Supplementary information:
FERMCO has determined that these requirements do not apply to the Materials which do not contain such agents.

Attachment J.4.5

[RESERVED]

Attachment J.4.6
WPRAP Hazard Category Worked Examples

ATTACHMENT J.4.6
WPRAP HAZARD CATEGORY WORKED EXAMPLES

J.4.6.1 Introduction

This attachment contains a simplified approach for estimating the hazard category associated with exposed areas of Operable Unit 1 (OU1) waste pit material. The data and methodology described are to be used for pre-award verification that the activities proposed by the contractor are within the Other Industrial Hazard category as defined in DOE-EM-STD-5502-94, "Hazard Baseline Documentation."

The subcontractor shall prepare and issue a safety assessment as described in Attachment J.3.2 of this subcontract.

Questions regarding the data or methodology are to be directed to the FERMCO Technical Representative for resolution.

J.4.6.2 Source of Methodology

DOE-EM-STD-5502-94 establishes criteria for Nuclear, Radiological, Non-Nuclear, and Other Industrial Hazard facility hazard categories in terms of potentially releasable material. Final remediation of the waste pit material is expected to expose areas of contaminated material in the form of process feed and post-processing stockpiles, and excavation faces.

Data generated as part of the OU1 Remedial Investigation (RI) and Dewatering Excavation Evaluation Program (DEEP) indicates that the pit waste material has soil-like characteristics, therefore, the principles involved with wind erosion of soil can be applied to the OU1 pit material exposed areas. This phenomena is not well understood in the Southern Ohio area because the climate and ground cover protect soil from erosion. Subject Matter Experts from Texas Technical University and Fluor Daniel (Irvine) prepared "Procedures for Evaluation of Particulate Emissions from Area Sources During a Worst-Case Wind Event at the Fernald Environmental Management Project," issued April 1996 and hereinafter referred to as Procedures for Evaluation. The method described in these Procedures for Evaluation was used to estimate the releasable material for OU1's soil-like pit wastes. This methodology was also adapted to estimate releasable material due to a natural gas explosion.

J.4.6.3 1-in-100 year high wind event

The 1-in-100 year high wind event is consistent with Performance Category 2 evaluation criteria listed in DOE-STD-1020-94, "Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities." Performance Category 2 was selected because the high wind event could release radioactive and toxic materials which would impact hazard recovery activities.

Procedures for Evaluation

To assure a uniform approach to assessment of high wind events, Procedures for Evaluation have been issued. These Procedures for Evaluation contain:

- Meteorological conditions to be used to estimate material lost from exposed area sources and their derivation
- The wind erosion methodology to be used for that estimate and its derivation

The meteorological conditions are FEMP-Site specific and are based on the following:

- Meteorological reports from the Greater Cincinnati Airport dating from 1946 through 1993
- The high wind event occurs over a 24-hour period
- Threshold wind velocity for the FEMP is 12.6 meters per second (m/s). Wind speeds below 12.6 m/s will not erode FEMP soils or soil-like materials.
- The 1-in-100 year wind velocity for the FEMP is 33.5 m/s (75 miles per hour (mph))

The wind erosion methodology has parameters which include:

- Moisture content
- Particle size
- Surface roughness

J.4.6.4 Explosion Event

It is anticipated that a high energy source will be used to dewater the waste pit material. This energy source and it's proximity to large inventories of contaminated materials (the pre-process/post-process stockpiles) has a significant impact on hazard category determination.

Equivalent high wind event

Detonation of an energy source has been converted into an equivalent high wind event. The methodology is based on natural gas as the energy source. If the subcontractor is proposing an alternative, contact the FERMCO Technical Representative for direction on fulfilling the Explosion Event evaluation submittal requirement.

The explosion sequence of events is as follows:

1. Natural gas is continuously released at the supplied rate.
2. Natural or mechanical ventilation draws the natural gas vapor cloud in the direction of the largest inventory of waste pit material.
3. An explosive concentration is achieved and the vapor cloud detonates.

4. The resulting explosion ruptures the thermal desorption unit's containment.

5. The distance from the leak that this detonation occurs is a function of the natural gas flow rate.

6. A peak overpressure of 2 pounds per square inch (psi) is assumed because this will partially collapse walls and roofs.

7. The corresponding wind speed for a 2 psi overpressure is 70 mph.

8. The effective blast diameter is determined by:

   a. Calculating the distance from the gas leak at which the lower explosive limit (LEL) and upper explosive limit (UEL) occur.

   b. Calculate the distance to achieve a 2 psi overpressure

   c. The distance between the LEL and UEL is the explosive region. By adding twice the distance to 2 psi (from 8.b. above) yields the explosion effect.

   d. Then, to maintain kinetic energy density over this area, double the effective diameter for conservatism.

9. The equivalent high wind event occurs over the area with this effective blast diameter.

J.4.6.5 <u>Limitations to the Methodology</u>

J.4.6.5.1 General limitations are:

- The Procedures for Evaluation are based on a soil pile with a height-to-base ratio less than or equal to 0.2.

- The Procedures for Evaluation assume the stockpiles are configured rectangularly (as opposed to cone-shaped).

These general limitations represent process requirements or commitments for operation for remediation of OU1 waste pit materials.

J.4.6.5.2 OU1 Specific Limitations

J.4.6.5.2.1 Moisture Content

The Procedures for Evaluation allow moisture content as a process variable. Moisture content will vary from pit-to-pit; form process-to-process; and from hour-to-hour as the material sits in interim storage piles. Soil becomes more dispersible as it becomes drier. For OU1 estimates of wind erosion, moisture content is based on relative humidity (RH), specifically 80% RH, which translates to 3.6% moisture content on a dry weight basis.

This is a conservativism in the estimation method. The soil-like materials from OU1, however, do not readily release their moisture. Instead, they retained a pudding-like or shortening-like consistency in laboratory tests and during observation as part of DEEP.

J.4.6.5.2.2 Constituents of Concern

Data source for the radiological and chemical constituents of concern is the OU1 RI and CIS. The highest detected value was used for each constituent in each pit. The default concentrations were derived by choosing the highest detected value for each constituent from each pit.

J.4.6.5.2.3 Passive Controls and Mitigators

Credit can be taken for passive controls and mitigators in calculation of potentially releasable material. A passive control or mitigator is defined as a feature whose physical configuration furnished the required safety function and they do not require any action to perform their safety function.

A building or containment structure is not to be considered a passive control or mitigator.

J.4.6.5.2.4 Stockpile Height

Limitations on stockpile height are:

- Height-to-base ratio $\leq$ 0.2
- OSHA recommendation of a maximum 34° angle of repose for excavations

Geotechnical data for stockpiled OU1 material indicates an average angle of repose of 30 °.

J.4.6.6 <u>Events Beyond the 1-in-100 year High wind Event and Natural Gas Explosion</u>

The subcontractor's system will include hazards specific to their design. Evaluation of system-specific hazards plus a more formal 1-in-100 year high wind event and natural gas explosion evaluation will be prepared by the subcontractor as described in Attachment J.3.2.

Worked Example #1

Assume that the eight waste pits form one segment and there is no energy source, such as a natural gas line, which could disperse large quantities if it exploded. Waste pits 1, 3, and 5 are open. Pits 1 and 3 are being mechanically excavated. Pit 5 has been partially dewatered. Estimated exposed surface areas are:

- Pit 1 = 1.6 acres
- Pit 3 = 2.0 acres
- Pit 5 = 3.5 acres

Using Table J.3.2-1 and Figure J.3.2-1 (Worksheet for high wind event) from Attachment J.3.2, what is the hazard category for this activity?

Answer: Since Pits 1 and 3 are being mechanically excavated, the surface can be assumed to be rough. Pit 5 surface can be assumed to be smooth. Note that both assumptions should be visually verified. Since there is not energy source for an the explosion event, only the 1-in-100 year high wind event scenario applies to this example.

From the Worksheet (see Figure J.4.6-1), the eight waste pit segment is a Non-Nuclear hazard category facility, based on the Pit 3 fraction of 1.21 for arsenic.

If the Pit 3 exposed area was reduced from 2 acres to 1.5 acres, then the Non-Nuclear fraction would be 133/1.62E+02 = 8.21E-01 and this would be an Other Industrial Hazard facility.

Worked Example #2

Assume that the eight waste pits form one segment and there is no energy source, such as a natural gas line, which could disperse large quantities if it exploded. Waste Pits 1 and 2 have been mechanically excavated. Material from both pits have been mixed together using a front end loader and is sitting in a stockpile. Estimated exposed surface areas are:

- Pit 1 = 2 acres
- Pit 2 = 1 acre
- Stockpile = 3 acres

Using Table J.3.2-1 and Figure J.3.2-1 (Worksheet for high wind event) from Attachment J.3.2, what is the hazard category for this activity?

Answer: Since the pits have been mechanically excavated and mixed with a front end loader, their surfaces can be assumed to be rough. Note that this should be visually verified. Since there is not energy source for an the explosion event, only the 1-in-100 year high wind event scenario applies to this example.

From the worksheet (see Figure J.4.6-2), this area is an Other Industrial Hazard activity because all the fractional values are below 1.0.

Worked Example #3

Assume the waste handling facility is a single segment. Material brought here, stockpiled, and processed is assumed to have a rough surface area. The waste handling facility has a roof but no side walls. All stockpiles are exposed, there are no bins or silos. The waste handling facility has the following material in inventory:

Worked Example #3 Waste Handling Facility Inventory				
Location	Floor Area (ft)	Volume of Material (cubic yards)	Surface Area	
			Square Feet	Acres
Wet Storage	65 by 250	3000		
Dryer Feed	90 by 235	6000		
Dryer	50 ft long by 6 ft in diameter	Assume 10% of shell interior volume		
Post Dryer	100 by 140	1600		
Load-Out	130 by 35	3200		

The dryer uses natural gas at a flow rate of 1200 pounds per hour.

Determine:

1. Volume of material in the dryer

2. Surface area for each location

3. Hazard Category for:

   a. 1-in-100 year high wind event

   b. Natural gas explosion event

4. What is the maximum inventory surface area that can be kept within the waste handling facility if that facility hazard category stays as an Other Industrial Hazard?

Answers:

1. Volume of material in the dryer.

Volume of Material = 10% of shell interior volume

= 0.1 * (π * ((diameter)^2/4) * length) = 0.1 * (π * ((6)^2)/4) * 50)

= 141 cubic feet = 5 cubic yards

2. Surface area for each location. Note that 1 acre = 43560 square feet. Worse-case surface area = base area. Therefore for the Wet Storage location:

65 ft * 250 ft = 16250 square feet

16250 square feet/(43560 square feet/acre) = 0.37 acres

Continue the calculation for all locations other than the dryer.

Dryer equivalent surface area = circumference * length

= π * diameter * length = π * 6 * 50 = 942 square feet

= 0.02 acres

Note: The equivalent flat stockpile will be less than 2 inches deep.

141 cubic feet/942 square feet = 0.15 feet = 1.79 inches

Worked Example #3 Waste Handling Facility Inventory				
Location	Floor Area (ft)	Volume of Material (cubic yards)	**Surface Area**	
			Square Feet	**Acres**
Wet Storage	65 by 250	3000	**16250**	**0.37**
Dryer Feed	90 by 235	6000	**21150**	**0.49**
Dryer	50 ft long by 6 ft in diameter	**5**	**942**	**0.02**
Post Dryer	100 by 140	1600	**14000**	**0.32**
Load-Out	130 by 35	3200	**4550**	**0.10**
	Total	**13805**	**56892**	**1.30**

3. Hazard Categories

The material in these locations have been blended, therefore use the default values in Tables J.3.2-1 and J.3.2-2 of Attachment J.3.2. Their surface areas can be assumed to be rough. This should be visually verified.

a. The 1-in-100 year high wind event will affect all the stockpiles, therefore add the surface areas. The result is 1.30 acres. For the 1-in-100 year high wind event, the waste handling facility is an Other Industrial Hazard facility because the potentially releasable fractions are below 1 (see Figure J.4.6-3).

b. The explosion event assumes that natural or mechanical ventilation draws the leaking gas in the direction of the largest inventory. However, the maximum potentially releasable material from Table 2 is based solely on the fuel supply release rate. At 1200 pounds per hour, 71.9 kilograms of material could be released. For the explosion event, the waste handling facility is an Other Industrial Hazard facility because the potentially releasable fractions are below 1 (see Figure J.4.6-4).

Note that 71.9 kilograms of mixed inventory equates to a 1-in-100 year high wind event for an exposed inventory covering 4.5 acres.

4. The maximum inventory surface area is the one which would release 1.49E+02 kilograms of blended (default) material during the most restrictive event. If the natural gas release rate stays at 1200 pounds per hour, then the maximum potentially releasable material is 71.9 kilograms. If the 1-in-100 year high wind event occurs and the surface area is smooth, then the maximum area is 2 acres. If the surface area is rough, a 6 acre area can be kept.

WORKED EXAMPLE NO. 1 - FIGURE J.4.6-1

HAZARD CATEGORIZATION WORKSHEET FOR THE 1-IN100 YEAR HIGH WIND EVENT

Nuclear Facility			
	DOE-STD 1027	Potentially Releasable Material (Kg)	Fractional Values
	Column A	Column B	B/A
Waste Pit 1	5.35E+04	137	2.53E-03
2	2.25E+04		
3	4.20E+04	181	4.31E-03
4	4.03E+04		
5	6.46E+04	83	1.25E-03
6	1.15E+05		
Burn Pit	7.57E+04		
Clearwell	7.57E+04		
Default	2.25E+04		
Fractional Sum			8.16E-03

Radiological Facility			
	40CFR 302 Appendix B Criteria (Kg)	Potentially Releasable Material (Kg)	Fractional Values
	Column A	Column B	B/A
Waste Pit 1	7.74E+02	137	1.77E-01
2	3.69E+02		
3	6.05E+02	181	2.99E-01
4	5.77E+02		
5	1.04E+03	83	7.98E-02
6	2.70E+03		
Burn Pit	1.01E+03		
Clearwell	1.57E+03		
Default	3.69E+02		
Fractional Sum			5.56E-01

Non-Nuclear Facility				
	Chemical Species	40 CFR 302.4 Criteria (Kg)	Potentially Releasable Material (Kg)	Fractional Values
		Column A	Column B	B/A
Waste Pit 1	Chloroform	1.25E+03	137	1.10E-01
2	Benzo[a]pyrene	3.78E+03		
3	Arsenic	1.49E+02	181	1.21E+00
4	Chloroform	3.49E+03		
5	Arsenic	1.62E+02	83	5.12E-01
6	Arsenic	6.00E+04		
Burn Pit	Arsenic	2.16E+04		
Clearwell	Arsenic	2.52E+04		
Default	Arsenic	1.49E+02		

Notes:
1) The method used to determine the criteria (Kg) is found in Hazard Category Calculation Number 2, issued March 28, 1996.
2) Sodium is not considered in the criteria because sodium values in the CIS and RI do not represent the regulated chemical species.
3) The radionuclides hazard categorization criteria is based on a summation of the fractions for all radionuclides.
4) The chemical hazard categorization criteria is based on the fraction for each chemical species.

WORKED EXAMPLE NO. 2 - FIGURE J.4.6-2

HAZARD CATEGORIZATION WORKSHEET FOR THE 1-IN100 YEAR HIGH WIND EVENT

Nuclear Facility			
	DOE-STD 1027	Potentially Releasable Material (Kg)	Fractional Values
	Column A	Column B	B/A
Waste Pit 1	5.35E+04	179	3.35E-03
2	2.25E+04	6	2.67E-04
3	4.20E+04		
4	4.03E+04		
5	6.46E+04		
6	1.15E+05		
Burn Pit	7.57E+04		
Clearwell	7.57E+04		
Default	2.25E+04	44	1.96E-03
Fractional Sum			

Radiological Facility			
	40CFR 302 Appendix B Criteria (Kg)	Potentially Releasable Material (Kg)	Fractional Values
	Column A	Column B	B/A
Waste Pit 1	7.74E+02	179	2.31E-01
2	3.69E+02	6	1.63E-02
3	6.05E+02		
4	5.77E+02		
5	1.04E+03		
6	2.70E+03		
Burn Pit	1.01E+03		
Clearwell	1.57E+03		
Default	3.69E+02	44	1.193-01
Fractional Sum			3.67E-01

Non-Nuclear Facility				
	Chemical Species	40 CFR 302.4 Criteria (Kg)	Potentially Releasable Material (Kg)	Fractional Values
		Column A	Column B	B/A
Waste Pit 1	Chloroform	1.25E+03	179	1.43-01
2	Benzo[a]pyrene	3.78E+03	6	1.59-03
3	Arsenic	1.49E+02		
4	Chloroform	3.49E+03		
5	Arsenic	1.62E+02		
6	Arsenic	6.00E+04		
Burn Pit	Arsenic	2.16E+04		
Clearwell	Arsenic	2.52E+04		
Default	Arsenic	1.49E+02	44	2.95-01

Notes:
1) The method used to determine the criteria (Kg) is found in Hazard Category Calculation Number 2, issued March 28, 1996.
2) Sodium is not considered in the criteria because sodium values in the CIS and RI do not represent the regulated chemical species.
3) The radionuclides hazard categorization criteria is based on a summation of the fractions for all radionuclides.
4) The chemical hazard categorization criteria is based on the fraction for each chemical species.

WORKED EXAMPLE NO. 3a - FIGURE J.4.6-3

HAZARD CATEGORIZATION WORKSHEET FOR THE 1-IN100 YEAR HIGH WIND EVENT

Nuclear Facility			
	DOE-STD 1027	Potentially Releasable Material (Kg)	Fractional Values
	Column A	Column B	B/A
Waste Pit 1	5.35E+04		
2	2.25E+04		
3	4.20E+04		
4	4.03E+04		
5	6.46E+04		
6	1.15E+05		
Burn Pit	7.57E+04		
Clearwell	7.57E+04		
Default	2.25E+04	19	8.44E-04
Fractional Sum			

Radiological Facility			
	40CFR 302 Appendix B Criteria (Kg)	Potentially Releasable Material (Kg)	Fractional Values
	Column A	Column B	B/A
Waste Pit 1	7.74E+02		
2	3.69E+02		
3	6.05E+02		
4	5.77E+02		
5	1.04E+03		
6	2.70E+03		
Burn Pit	1.01E+03		
Clearwell	1.57E+03		
Default	3.69E+02	19	5.15E-02
Fractional Sum			

Non-Nuclear Facility				
	Chemical Species	40 CFR 302.4 Criteria (Kg)	Potentially Releasable Material (Kg)	Fractional Values
		Column A	Column B	B/A
Waste Pit 1	Chloroform	1.25E+03		
2	Benzo[a]pyrene	3.78E+03		
3	Arsenic	1.49E+02		
4	Chloroform	3.49E+03		
5	Arsenic	1.62E+02		
6	Arsenic	6.00E+04		
Burn Pit	Arsenic	2.16E+04		
Clearwell	Arsenic	2.52E+04		
Default	Arsenic	1.49E+02	19	1.29E-01

Notes:
1) The method used to determine the criteria (Kg) is found in Hazard Category Calculation Number 2, issued March 28, 1996.
2) Sodium is not considered in the criteria because sodium values in the CIS and RI do not represent the regulated chemical species.
3) The radionuclides hazard categorization criteria is based on a summation of the fractions for all radionuclides.
4) The chemical hazard categorization criteria is based on the fraction for each chemical species.

WORKED EXAMPLE NO. 3.b - FIGURE J.4.6-4
HAZARD CATEGORIZATION WORKSHEET FOR THE EXPLOSION SCENARIO

Nuclear Facility			
	DOE-STD 1027 Criteria (Kg)	Potentially Releasable Material (Kg)	Fractional Values
	Column A	Column B	B/A
Waste Pit 1	5.35E+04		
2	2.25E+04		
3	4.20E+04		
4	4.03E+04		
5	6.46E+04		
6	1.15E+05		
Burn Pit	7.57E+04		
Clearwell	7.57E+04		
Default	2.25E+04	71.9	3.2E-03
Fractional Sum			

Radiological Facility			
	40CFR 302 Appendix B Criteria (Kg)	Potentially Releasable Material (Kg)	Fractional Values
	Column A	Column B	B/A
Waste Pit 1	7.74E+02		
2	3.69E+02		
3	6.05E+02		
4	5.77E+02		
5	1.04E+03		
6	2.70E+03		
Burn Pit	1.01E+03		
Clearwell	1.57E+03		
Default	3.69E+02	71.9	1.95E-01
Fractional Sum			

Non-Nuclear Facility				
	Chemical Species	40 CFR 302.4 Criteria (Kg)	Potentially Releasable Material (Kg)	Fractional Values
		Column A	Column B	B/A
Waste Pit 1	Chloroform	1.25E+03		
2	Benzo[a]pyrene	3.78E+03		
3	Arsenic	1.49E+02		
4	Chloroform	3.49E+03		
5	Arsenic	1.62E+02		
6	Arsenic	6.00E+04		
Burn Pit	Arsenic	2.16E+04		
Clearwell	Arsenic	2.52E+04		
Default	Arsenic	1.49E+02	71.9	4,83E-01

Notes:
1) The method used to determine the criteria (Kg) is found in Hazard Category Calculation Number 2, issued March 28, 1996.
2) Sodium is not considered in the criteria because sodium values in the CIS and RI do not represent the regulated chemical species.
3) The radionuclides hazard categorization criteria is based on a summation of the fractions for all radionuclides.
4) The chemical hazard categorization criteria is based on the fraction for each chemical species.

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Attachment J.4.7

Collective Bargaining Agreement between FERMCO and FAT&LC, 3/1/94

1994 - 1998 Agreement

between

Fernald Environmental

FERMCO

Restoration Management Corporation

and

Fernald Atomic Trades and Labor Council

AFL-CIO Metal Trades Affiliated

AMERICAN FEDERATION OF LABOR
AFL CIO
CONGRESS OF INDUSTRIAL ORGANIZATIONS

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AGREEMENT

This Agreement is made and entered into this 1st day of March 1994 by and between the Fernald Environmental Restoration Management Corporation, its successors, assigns, or any successful bidding operator, hereinafter called the "Company" and the Fernald Atomic Trades & Labor Council, AFL-CIO, hereinafter called the "FAT&LC."

The Company and the FAT&LC recognize and agree that this Contract is meant to be binding upon any successor contractor at this facility. In the furtherance of that principal, the Company will immediately upon learning that its contract with the Department of Energy is being put out to bid and after ratification of this agreement, notify all prospective bidders that there is a Collective Bargaining Agreement in effect; that it is intended to be binding upon any successor employer; and to provide the prospective contractors copies of the current Bargaining Agreement, the insurance plan and contract, and the pension plan.

ARTICLE I

Application and Purpose of Agreement

SECTION 1-1: Application. This Agreement applies to the Fernald Project of the United States Department of Energy, located at Fernald, Ohio, operated by the Fernald Environmental Restoration Management Corporation, its successors, assigns or any successful bidding operator, and is limited to personnel as hereinafter defined, employed by the Company at said location.

SECTION 1-2: Purpose. The purpose of, and consideration for, this Agreement is to provide orderly relations between the Company and FAT&LC, to secure prompt and equitable disposition of grievances, and to establish fair wages, hours, and working conditions for the employees in the bargaining unit.

SECTION 1-3: Discrimination. The Company and FAT&LC reaffirm their intention that the provisions of this Agreement will continue to be applied without discrimination because of race, creed, color, sex, age, national origin, physical or mental disability, or because an employee is a disabled veteran or a veteran of the Vietnam Era, as these terms are used in applicable Federal Statutes including the Americans with Disabilities Act. There shall be no discrimination, interference or restraint by the Company against any employee because of membership or activity on behalf of the FAT&LC.

SECTION 1-4: Pledge of Parties. The intention of this Agreement is to establish harmonious relations between the Company and FAT&LC and its membership and to promote the general welfare of the Company and the employees. It is recognized that the harmonious relations desired can be established and maintained if both parties apply themselves to the achievement of this objective. Both parties agree to abide by the letter and intent of the Contract as negotiated.

Furthermore, in an effort to continually enhance understanding of this Agreement, the Joint Labor Management Committee agrees to jointly participate in periodic contract interpretation and implementation discussions and to establish a training program designed to enhance the relationship between supervisors and FAT&LC union stewards.

ARTICLE II

Recognition and Scope of the Agreement

SECTION 2-1: Union Recognition. The Company recognizes the FAT&LC as the sole and exclusive collective bargaining agent in all matters concerning wages, hours and working conditions for all hourly-paid production, maintenance, and service employees, excluding all office and clerical employees, guards, professional employees and supervisors as defined in the Act and as certified in the National Labor Relations Board's Certification, Case No. 9-RC-1563 dated July 10, 1952. The term "employee" as used herein shall mean any person represented by the FAT&LC as defined in this section.

The recognition of FAT&LC as the exclusive bargaining representative of the employees in this unit shall continue throughout their employment including periods when they are assigned to tasks related to closing the facility and reclaiming the site.

SECTION 2-2: Geographical Scope of the Agreement. This Collective Bargaining Agreement shall apply to all work performed by FAT&LC represented employees of the FEMP site and all off-site work to which they are assigned by the Company as referenced in Memorandum of Agreement No. 1. The FEMP site is the approximately 1100 acres in Butler and Hamilton Counties formerly known as the Feed Materials Production Center or Fernald Project of the United States Department of Energy, located at Fernald, Ohio and all locations occupied and/or operated by the Company, its successors, assigns or any successful bidding operator, and is limited to represented employees of the FAT&LC and employed by the Company at said locations.

SECTION 2-3: FAT&LC Scope of Work. The scope of work covered by this Agreement, as more fully set forth in the Memoranda of Agreement Nos. 1, 2 and 3 between the parties, shall consist of the following:

- All off-site work associated with the FEMP
- Certain remedial waste treatment and disposal
- Safe Shutdown
- Characterization/media sampling (excluding work currently being done by FERMCO salaried technicians)
- Gross decontamination
- Packing/shipping waste
- Operate, maintain and service permanent facilities
- Disposition of low specific activity (LSA) waste
- Routine maintenance asbestos abatement program
- All maintenance activities, production activities and service activities
- Free release decontamination at central processing plant
- Size reduction of material and equipment customarily done by FAT&LC

The parties also recognize that there may be additional work activities not specifically described herein which the Company may decide to assign to the FAT&LC. As future environmental remediation and restoration work is identified and is not contractually committed to under this Collective Bargaining Agreement, the Company and the FAT&LC will discuss the assignment of this work through the Joint Labor Management Committee, then, only if necessary, through a neutral facilitation process.

The work described in this section excludes functions outside the scope which are performed by employees paid by subcontractors.

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ARTICLE III

Stability of Employment

SECTION 3-1: Probation. A person hired shall be a probationary employee for 90 calendar days. The Company may discharge for just cause such probationary employee at the Company's discretion.

SECTION 3-2: Assignment of Work. Although the parties understand that layoffs may be caused by a variety of factors, there shall not be layoffs because of the use of this article permitting flexibility in the use of employees. Moreover, to promote stability of employment and to increase employment opportunities for employees, the parties direct that all provisions of this agreement be interpreted to permit optimum flexibility in assigning work.

Work by represented employees will be performed by four (4) work groups entitled Hazardous Material Maintenance, Abatement & Decommissioning Regulatory Technician Group (HAZMMAD), Hazardous Material Transportation Group (HAZMAT), Hazardous Waste Technician Group (HAZWAT), and Utilities Environmental Technician Group (UET). The job classifications contained within each of these work groups are identified in Appendix C.

Employees within the HAZWAT, MVO/Sampler, and MVO classifications may be pooled together to perform work. Employees from the HAZMAD and UET work groups may be assigned to work on an as needed basis for the purpose of execution of their craft duties. The Company will assign employees within the HAZMAD and UET groups to duties within their classifications except for assignments described in this agreement. When selecting the number of employees needed to complete the work, a proper mix between these classifications will be maintained. This new, combined team concept shall be called Hazrdous Waste Handling and Sampling Technician (HAZWHAST). The staffing of this team will be based on classification seniority, availability, training and qualifications. When not performing assigned work as a team, the employees will perform the work within their respective job classifications.

This team shall perform work assigned that they are trained and qualified to perform. In order to obtain flexibility, these employees will be cross-trained. At the time of assignment, the Company shall identify the length of the assignment. The team will remain on the assignment for its duration except as provided in Article XVII, Section 17-3.

SECTION 3-3: Training. The parties jointly recognize the critical importance of training to the success of the Project and will cooperate to the fullest extent in establishing, supporting and seeking government and/or other assistance or grants for all appropriate training programs for work performed at the FEMP site (see Mem. of Agreement 4).

The Company is fully committed to provide training and re-training for the FAT&LC bargaining unit. FAT&LC and the Company will participate in the general planning and development of work related education and training programs. These training programs and work force restructuring activities will be developed in the spirit of 3161 (Defense Authorization Act) and in accordance with DOE approved matrix requirements associated with DOE Order 5480.20 (Personnel Selection, Qualification Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities).

Identification of core tasks and related requirements for specific job classifications will be determined by the Company in conjunction with FAT&LC. New equipment and technology will require analysis and potentially new task requirements to be added to existing core task requirements. These new requirements will be determined by the Company in conjunction with FAT&LC.

Qualification of persons within a specific job classification will be based on qualification standards which will be in accordance with analyzed tasks, conduct of operations requirements, DOE Order 5480.19 (Conduct of Operations Requirements for DOE Facilities), and determined by the Company in conjunction with FAT&LC. The Company should conduct job analysis as required by the DOE approved 5480.20 matrix and as new equipment/technologies dictate. Personnel will receive a FEMP certification card when they satisfactorily complete the qualification core task requirements of a job classification. All personnel would be provided equal opportunity to qualify on all core tasks within their job classification.

SECTION 3-4: Skills and Competency. The Company shall have the right to determine the qualifications needed for all future job assignments and the competency of the employees selected and shall have the right to determine the number and classifications of employees required for such assignments. The Company agrees to discuss these matters with FAT&LC prior to implementation of the program. Consistent with industry standards, the Company shall have the right to establish minimum competency, skills, job duties and responsibilities, and training requirements for all existing job assignments and to determine whether employees currently holding those jobs meet those requirements. The FAT&LC agrees to jointly cooperate and participate in the development and implementation of these programs and the Company agrees to establish a program to assist employees who do not meet the minimum requirements of their job to acquire the necessary competency, skills and training. The Company reserves the right to reassign any employee who does not meet the minimum competency, skill or training requirements of the job assignment in a reasonable period of time, but does not restrict the Company from considering other alternate measures.

SECTION 3-5: Certification. The Company agrees to institute the employee certification programs. The Company and the FAT&LC agree to jointly develop and implement such programs.

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SECTION 3-6: Job Classifications. The Company will provide the FAT&LC with copies of the descriptions of those job classifications covered by this Agreement and agrees to give the FAT&LC the opportunity to offer suggested changes during the preparations of such job descriptions before they become effective.

ARTICLE IV

Safety and Health

SECTION 4-1: Employer Responsibilities.

A. The Company and the FAT&LC recognize the need for both parties to participate in the development and implementation of practices that will:

1. ensure that worker health and safety concerns are fully considered

2. be such that the Company provide and guarantee an open environment in which employees may freely express concerns without fear of reprisal, harassment, and/or retaliation

3. allow workers and their representatives access to needed/requested information to include, but not limited to, all occupational injuries, illnesses, medical surveillance, industrial hygiene, and radiological monitoring relative to safety and health aspects of their work environment

4. define exposures in a manner which can be consistently applied and clearly understood.

5. provide for the prevention and early detection of work-related disease.

B. It shall be the ultimate responsibility of the Company to ensure the safety and health of the work force, and to accomplish that objective the Company shall operate in accordance with safety, health, and radiation standards based on recommendations by the International Commission on Radiological Protection (ICRP), as may be established by the Department of Energy, the Occupation Safety and Health Administration, or any other agency ultimately designated by the United States Government to establish standards applicable to the Fernald Project. The Company has adopted, and will continue to follow, the ALARA (As Low As Reasonably Achievable) principle regarding radiation exposure.

The Company recognizes that the dose limits in the ICRP's most recent recommendations (ICRP-60) are incorporated into the DOE's Radiological Control Manual, and agrees to comply with that document and successor DOE guidance except exemptions as granted by the DOE. The Company agrees not to seek exemption from the dose limitation features in the DOE Radiological Control Manual.

C. No employee shall be discharged, disciplined, or suffer reprisal for bringing safety and health concerns to the attention of DOE, the Company Management, FAT&LC Representatives, outside investigators, attorneys, physicians, or the media. It is agreed that an individual who brings such matters to the attention of outside persons will provide the same information or concerns to the Company, through the FAT&LC representatives to the Executive Health and Safety Committee, consistent with the Company's ultimate obligation for health and safety.

D. For the purpose of this entire Article, the FAT&LC's role in safety and health matters is strictly advisory, and the FAT&LC, its affiliated International Unions or Local Unions and their respective officials and agents, shall not be made liable for any work-related injuries, disability or diseases incurred by employees or injuries or diseases to the families or acquaintances of the employees.

E. The Company and its agents, when considering the design or modification of equipment in the facility, shall limit exposures to hazardous materials by the use of engineering controls.

SECTION 4-2: Worker Protection. The Company and FAT&LC recognize and agree that our goal in worker protection is to continually strive to eliminate unnecessary occupational exposures to individual workers and the total worker population. Each of us, as employees, must recognize our individual and collective responsibility to insure that every activity at the FEMP involving exposure to hazardous materials is planned and performed so as to achieve the goals of ALARA.

In accordance with the Company's commitment to this principle regarding occupational exposure, the Company will make every effort to keep worker exposures as low as possible.

To further this goal, the Company will establish annual goals for the purpose of eliminating internal and external exposures for the total workforce. These goals will be designed to continually improve worker protection.

It shall be the Company's responsibility to provide hazardous materials protection training to make employees better aware of the principles of personal protection as well as help employees understand the Company's programs, procedures and practices relating to worker protection. The Company shall provide and shall strive to continually improve engineering and hazardous materials controls for worker protection.

It shall be the Company's responsibility to establish work practices that are protective of worker health for working in hot or cold environments. These practices shall comply with applicable DOE and OSHA requirements, or standards published by other organizations (such as the American Conference of Governmental Industrial Hygienists [ACGIH]) that have been adopted by reference by DOE.

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Consistent with the intent of Article IV, Section 4-1 of the current Agreement, annual goals, planned hazardous material protection procedures, training and other pending programs and practices relating to worker protection shall be presented to the Company and FAT&LC Negotiating Committees so that the Company and FAT&LC will jointly participate in the development and implementation of these items, clearly understanding them and fully considering input and concerns.

To help implement the above statements of intent, the Company shall provide for training of employees prior to work assignments where hazardous materials can be encountered.

Furthermore, in addition to the designated representative of the FAT&LC referred to in Article IV, Section 4-6 (C) of the current Agreement, the Company shall train a sufficient number of bargaining unit employees in the use of radiation detection equipment so trained employees shall be available on all shifts to monitor and verify radiation detection equipment readings reported by Company Radiation Technicians when so requested by employees.

SECTION 4-3: Disagreement on Hazards of Assigned Work.

A. A worker who is given a job assignment which he or she reasonably and honestly believes to be abnormally dangerous due to potential hazards shall immediately notify his or her supervisor of the concern. The supervisor will immediately investigate the matter and determine whether the employee's concerns are justified, and, if so, whether those concerns can be eliminated by immediately available administrative controls, engineering changes or personal protective equipment. If agreement between the supervisor and employee is not reached, the nearest FAT&LC Safety Representative or Steward (if no Safety Representative is available) and a Company Health and Safety Representative shall be summoned for discussion. If agreement between the Company and FAT&LC Representatives is not reached, the supervisor may elect to perform him/herself, or through other means, those aspects of the work about which the employee is concerned, but in no event can those other means include other bargaining unit personnel who express a preference not to perform such work.

B. A worker who declines to perform assigned work as provided in (A) of this section will not be disciplined but will instead be reassigned to other available work, and will retain his or her regular rate or a higher rate if applicable, while it is performed by either the supervisor or those other means which he or she determines; and the employee will be returned to the job when the specific aspect of the work about which the employee was concerned has been completed.

C. If the employee's concern was about an aspect of the job which cannot be resolved by the supervisor having the work performed in another manner, then the matter shall be referred to the Joint Executive Safety and Health Committee for consideration during the following business day. If the Joint Executive Safety and Health Committee is unable to resolve this matter, and the FAT&LC elects to protest the Company's decision regarding the assigned work, then the parties shall arbitrate the matter within (5) days of the Company's final decision. The arbitrator shall be selected by alternately striking names from a pre-selected panel of arbitrators who have agreed to be available on short notice to consider such disputes, and the matter will be heard by that arbitrator and a decision rendered from the bench. If the Company's position is rejected, the Company shall bear all costs for the arbitrator; if the FAT&LC's position is rejected, the costs shall be shared equally between the two parties.

D. If either the Company or the FAT&LC disagree with the bench decision, the matter may be considered through the grievance procedure. However, both parties shall agree to comply with the initial decision while the matter is pending in the regular grievance and arbitration procedure.

SECTION 4-4: Safety and Health Committees

A. Joint Executive Safety and Health Committee

1. The Company and FAT&LC shall each designate five representatives to a Joint Executive Safety and Health Committee. Joint monthly meetings shall be conducted and joint minutes will be prepared and made available to all employees. In addition, at either party's request, meeting can be held to expedite safety and health issues.

2. The Joint Executive Safety and Health Committee shall be the designated forum for the exchange of information or request for information identified in this Article or made subsequently by the FAT&LC.

3. Time needed by the FAT&LC designates to the Joint Executive Safety and Health Committee to preform work on meetings or other matters relevant to the performance of their duties on the Committee, and which is undertaken during regular working hours, shall be considered as hours worked for purposes of compensation by the Company.

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4. The FAT&LC representative to the Committee shall be permitted access to or provided with copies of documents related to the workplace safety and health of bargaining unit employees, subject to any modification necessary to remove personal identifiers. These records include, but are not limited to, monitoring results, exposure records, timely notice of unusual occurrences and accidents and reports thereof; and OSHA inspections and NIOSH health hazard evaluations.

5. The FAT&LC representatives to the Joint Executive Safety and Health Committee may make specific written recommendations for improving health and safety conditions. The Company shall respond in writing to the FAT&LC recommendations within thirty (30) days of their receipt by the Company.

6. The FAT&LC representatives to the Joint Executive Safety and Health Committee shall have the right to call the facility consultants or authorities to conduct examinations, investigations, measurements or tests related to the safety and health of bargaining unit employees. It is agreed that any recommendations shall be promptly shared with the Company, and that access to the facility shall be consistent with the considerations applicable to all visitors.

7. The FAT&LC representatives to the Joint Executive Safety and Health Committee may initiate grievances on behalf of all or part of the bargaining unit and which arise from disputes related to the Health and Safety articles of the Contract. Grievances filed by FAT&LC representatives to the Joint Executive Safety and Health Committee shall be initiated at the third step of the regular grievance and arbitration procedure.

B. FAT&LC/Management Safety Committee

1. In addition to the Joint Executive Safety and Health Committee, a meeting shall be held monthly by the President and Vice President of the Council, Company representatives, and the FAT&LC Safety Committee Members. Such FAT&LC Committee Members are not to exceed twenty-five (25) in number.

SECTION 4-5: Workers Right to Know.

A. The Company and/or its agents are responsible for providing all training and information necessary for workers to understand the hazards associated with the performance of their jobs, including timely notice of any new or additional

chemicals, procedures, operations, products and equipment which are introduced into the work place.

B. The Company and FAT&LC shall provide prior notice to each other of any scientific, medical or statistical studies, and any program of medical or biological testing of the hourly workforce, or of blood, hair, urine or other excreta, or of tissue samples, organs or bodies of hourly workers. Such notification will include a discussion of protocols and preliminary and final results of such studies or programs.

C. Employees shall be freed from normal job responsibilities as necessary to enable them to participate in training required by the Company for the safe performance of their respective jobs, without loss of seniority or other benefits for time spent in such health and safety training.

D. Nothing in this Article shall be construed to waive, limit or supplant the union's legal or administrative rights of access to information, including, but not limited to, access rights specified in the National Labor Relations Act.

E. Employees shall be provided copies of medical and exposure records to include, but not limited to, all occupational injuries, illnesses, medical surveillance, industrial hygiene, and radiological monitoring relative to the safety and health aspects of their work environment within ten (10) working days of receipt by the Company of the employees request. Employees may designate the FAT&LC to receive copies of their medical and exposure records, and the records will be delivered within ten (10) working days of receipt by the Company of an individually completed authorization by the employees. If a group of individual requests are received simultaneously, the Company shall advise the FAT&LC if additional time will be necessary to provide the information. This agreement does not prejudice the employee's or FAT&LC right of access to medical and exposure records under O.S.H.A. Access Standard 1910.20. Modifications to the medical and exposure request form will be made upon mutual agreement by the parties.

SECTION 4-6: Workplace Monitoring.

A. The Company shall conduct routine monitoring of air contaminants, noise levels, and other environmental conditions which may pose potential hazards to employees.

B. The Company shall maintain a regular program of workplace monitoring which will include monitoring performed prior to entry into vessels or enclosures. In addition, the Company shall perform additional monitoring and sampling upon receiving request by either individual employees or the FAT&LC Safety Representatives.

C. The Company shall train a designated representative(s) of the FAT&LC in the use of radiation monitoring equipment, and will make available to that individual monitoring equipment which will allow the FAT&LC representative(s) to conduct monitoring concurrently with the Company Health and Safety Representatives if the employee so requests and the FAT&LC representative is available and concurs.

SECTION 4-7: Periodic Physical Examinations.

A. Standards and requirements for special health examinations and health monitoring of employees who work in jobs involving specific physical, chemical, or biological hazards shall be in accordance with applicable OSHA/DOE standards. Required physical examinations shall be performed annually for all employees who fall in the Medical Surveillance program per DOE Order 5480.8A or other applicable regulations.

All other employees will recieve physical examinations based on the following schedule:

Age 45 and over	--	Annually
Age 44 and younger	--	Every other year

A fundamental purpose of these examinations is to provide employees with the periodic assessment of their health. Accordingly, all components of the comprehensive examination shall be included, as well as other preventive health measures such as health-risk appraisals or wellness counseling as authorized by the Site Medical Director.

Results of tests performed during the examination shall be provided to the employee after the results are available to the physician, and the physician will discuss with the employee the results of the physical examination.

B. Employees shall have a continuing opportunity to meet with a Company physician or other Company health professionals to discuss the results of physical examinations, exposure sampling or monitoring directly related to the employee.

C. Respirator fit testing shall be provided to all employees who are required to use a respirator or other breathing apparatus.

SECTION 4-8: Safety Equipment.

A. The Company shall provide, without cost to employees, the following personal protective equipment to include but not limited to:

- Safety glasses (including respirator glasses)
- Steel-toed leather safety shoes
- Coveralls, underwear, and socks
- Winter coats and gloves
- Anti-contamination clothing
- Dosimeter badge
- Hard hat

B. The Company shall furnish, at no cost to the employees, safety shoes and safety glasses (to include prescription safety glasses) to the employees, and employees shall be required to wear safety shoes and safety glasses where designated at the Project.

SECTION 4-9: Absences due to Occupational Illnesses or Injuries. It is agreed that absences related to occupational injury or illnesses shall not be used for disciplinary purposes when the absence is supported by the treating physician's statement supporting the specific absence.

SECTION 4-10: Document of Authority. Article IV of this contract is recognized as the document of authority for workplace safety and health. The Company's Safety and Health Plan and the Radiological Control Manual serve to support Article IV.

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ARTICLE V

Management Rights

SECTION 5-1: Rights Retained. The Company retains the customary rights of management which shall include, but not be limited to:

A. The right to select, assign and direct the working forces;

B. The right to determine job content;

C. The right to establish job qualifications and to determine qualifications of employees consistent with Article III;

D. The right to subcontract consistent with Article VI and Memorandum of Agreement No. 5;

E. The right to adopt and enforce reasonable rules and regulations for efficient operations;

F. The right to discipline or discharge employees for reasonable and just cause provided that the exercise of management rights shall not conflict with the provisions of this Agreement, including use of the Grievance and Arbitration procedure.

SECTION 5-2: Methods and Productivity. The Company may utilize any methods or techniques needed for this project and there shall be no limitations or restriction on work, the use of precast, prefabricated, preassembled devices, nor shall there be any limitation upon choice of materials, design or technology.

SECTION 5-3: Vehicles. Company managers, supervisors and technicians may drive pick-up trucks, automobiles, and carts.

SECTION 5-4: Scientific Personnel. Scientific, research, and development personnel may perform manual work on subjects essential to effective completion of standarization. When such work is standardized to the Company's satisfaction, FAT&LC represented employees will be trained and certified to operate such processes. It is understood and agreed that no provisions of this Section shall be utilized for the purpose of depriving the employees within this bargaining unit of their scope of work, including new technology or processes to be developed.

SECTION 5-5: Work Performed by Supervisors or Technical Personnel. Supervisory or Technical Personnel shall not do non-supervisory work which will deprive bargaining unit employees of work customarily performed by them. This does not prevent supervisory or technical personnel from performing necessary functions of instructions or assistance to employees, from being trained for the competency in the operation of the process, or from temporarily operating for purpose of determining the operating characteristics of new or revised equipment or processes, or in an emergency or for experimental purposes.

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ARTICLE VI

Project Labor Pool

SECTION 6-1: Project Labor Pool. The Company shall maintain a project labor pool to ensure that the proper skill mix of FAT&LC workers are available when needed for activities on the site. The project labor pool encompasses work covered under Article II, Section 2-3 "Scope of Work" regardless of whether the work is performed by the Company or a subcontractor, as outlined in the Memorandum of Agreement No. 5.

Through the course of planned remediation of the FEMP, FAT&LC represented workers shall be utilized for; 1) level of effort activity and 2) environmental remediation activity regardless of whether the work is self-performed by the Company or a subcontractor.

Landlord activity and basic site services will be performed on an ongoing basis as a level of effort activity. By contrast, site remediation and restoration will be performed through a number of discrete projects which have a beginning and completion date. The Company shall use this criteria in determining what is an assignment.

Assignments require a varying skill mix for those classifications detailed in Appendix C. Work force requirements for assignments shall be filled from the project labor pool. Openings or vacancies in assignments shall be filled based on seniority within each classification. Upon completion of work in an assignment, workers shift into the project labor pool where they become eligible for another assignment (performed by either the Company or a subcontractor.) Workers are then re-assigned based on the skill or craft requirements of the succeeding assignment in order of classification seniority. Openings shall be posted in advance. Employees in the project labor pool will be placed on lay-off if:

A. There is no work in that classification available at the time in either an assignment or level of effort activity;

B. There is not a different job opening the employee is qualified to perform, such as another skilled craft or a HAZWAT or HAZMAT.

Recall rights, as outlined in Article XVI, Section 16-9 extend for a time equal to length of service or two years, whichever is less. Severance will not be paid unless the worker has at least 12 months of total service.

When an increase in the work force is required, the project labor pool shall serve as the mechanism to add employees where needed. Those with the required skills shall be preferentially hired or rehired in the following sequence: 1) Employees who are on lay off and have not taken retirement; 2) Applicants from DOE defense nuclear facilities from

within a 300 mile radius of the FERMCO site who have lost jobs as a result of a permanent reduction in force and who have made application; 3) Applicants who are outside the DOE system.

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ARTICLE VII

Work Stoppage, Lockouts, and Related Actions

SECTION 7-1: Dispute Resolution Procedures. The parties agree to process all disputes and differences between them through the procedures provided in this Agreement including the grievance/arbitration procedure, the Grievance Committee and the Joint Labor Management Committee.

SECTION 7-2: No Strikes/Lockouts. During the term of this agreement, there will be no strikes, picketing, slow-downs, work stoppages, or similar activities of any kind on or at the Project. There will be no interference with the delivery of material to the Project. There will be no lockouts.

SECTION 7-3: Remedies for Breach. Nothing shall be deemed to limit or restrict the Company's or the FAT&LC right to pursue any and all remedies available under law in the event of a violation of this Article.

ARTICLE VIII

Grievance Procedure and Arbitration

SECTION 8-1: Stewards and Grievance Committee. The Company agrees to recognize the number of properly certified Stewards, as defined in Article X, Section 10-7, for the purpose of representing employees in the Grievance Procedure.

The Company also agrees to recognize a Union Grievance Committee, not to exceed six (6) members plus the President of the Council as Chairperson for the FAT&LC. No more than three (3) members of the Union Grievance Committee may attend any Step 3 meeting under this Article, in addition to the Union President, grievant and Steward.

The FAT&LC will notify the Company of any changes in the personnel of the Stewards or Grievance Committee.

SECTION 8-2: Discussion. Any employee may discuss with his or her supervisor any matter he or she feels requires adjustment. A FAT&LC representative or steward from any affiliated union may file a grievance on behalf of their respective unions.

SECTION 8-3: Grievance Procedure. Any grievance arising under the terms of this Contract, or an alleged violation thereof, shall be handled in the following manner:

Step 1. Any employee, or group of employees, having a grievance shall first take the matter up with his or her Steward, who shall attempt to adjust the matter with the employee's supervisor. Unless settlement is reached within two (2) days, the grievance may be carried to Step 2.

Step 2. If the grievance has not been settled in Step 1, it shall be referred in writing by the Steward to the immediate Supervisor for referral to the next level of supervision for resolution. Unless settlement is reached within two (2) days, the grievance may be carried to Step 3.

Step 3. If not satisfactorily settled in Step 2, the written grievance shall be submitted to the Company for possible settlement in a meeting between the Union Grievance Committee, Industrial Relations, and other Company representatives. Such meeting shall be held within seven (7) days from the date grievance is received by the Company. The Company's answer shall be given within seven (7) days after the meeting and shall be in writing. If no agreement is reached, it may be referred to arbitration in accordance with Step 4.

Step 4. If the issue at Step 3 is not resolved, the FAT&LC may, within thirty (30) working days, refer the grievance to arbitration and the parties shall request the FMCS to present a list of seven (7) recommended arbitrators. Within five (5) working days, either party may request a new list once. Within ten (10) working days of receipt of the final list, the parties shall select the Arbitrator. The initial party to begin alternately striking names from the list shall be determined by a toss of a coin with the loser striking first. This will continue until a single name remains and who shall be the arbitrator designed to hear the dispute. The arbitration hearing shall be conducted within ninety (90) calendar days of the selection of the arbitrator. Each party shall have the right to present to the arbitrator whatever evidence it deems desirable. The arbitrator's decision shall be final and binding on both parties, provided however, that the arbitrator shall not have the authority to alter or amend the provisions of this Agreement in any way. In the event the services of an arbitrator are required, the fees and expenses shall be paid one half (1/2) by the FAT&LC and one half (1/2) by the Company. Either party shall have the right to have a transcript made of the proceedings at its own expense. In the interest of resolving disputes in a fair and good faith manner, facts as they are known by either party with regard to the issue will be disclosed as they become known.

A grievance contesting a suspension or discharge shall be initiated in Step 3 of the Grievance Procedure.

When two (2) or more grievances are filed concerning the same incident, the grievances may be combined when reduced to writing and appealed to Step 3.

It is understood that the provisions of the Labor-Management Relations Act shall be applicable to the above described Grievance Procedure.

SECTION 8-4: Arbitration on Subcontracting. For disputes involving the implementation of the Memorandum of Agreement on Subcontracting (See Memorandum of Agreement No. 5 SECOND), the FAT&LC shall grieve these disputes only through a written grievance with the Company. The parties shall exchange information necessary to resolve the grievance within ten (10) working days, and in all cases prior to a hearing before an arbitrator.

In the event the dispute cannot be resolved within fourteen (14) working days of the filing of the grievance, and FAT&LC elects to protest the issue in contention, the parties may submit the dispute to expedited arbitration.

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Whenever possible, the arbitrator shall hear the case within twenty (20) working days of being selected, and shall decide the case within ten (10) working days of the hearing. Unless required by emergency situations or unforseen circumstances, the Company shall await the arbitrator's decision before awarding the contract or subcontract.

SECTION 8-5: Time Limits: Any grievance not taken up with the employee's supervisor within ten (10) working days after becoming aware of the occurrence of the incident complained of cannot be processed through the Grievance Procedure. A decision by the Company at a step in the Grievance Procedure which is not appealed to the next higher step in the Grievance Procedure or to arbitration, within the allotted time after the decision has been rendered by the Company, will be considered to have determined that particular grievance. The FAT&LC's failure to carry a grievance from one step to the next or to arbitration within the specified time limit shall be without prejudice to the FAT&LC's right to process the same subject matter (although not the very same case) in another grievance. All time limits noted in this Article are exclusive of holidays. Extensions may be made by mutual agreement.

SECTION 8-6: Settlements. To encourage resolution of disputes and grievances at the lowest possible level, the parties agree that settlements and other resolutions at Step 1 and Step 2 shall not set a precedent.

SECTION 8-7: Pay for Grievance Time. Stewards, grievants and employees who are members of the Union Grievance Committee and witnesses involved in the Steps 1, 2, and 3 of the grievance procedure in this Article shall suffer no loss of pay, provided it is arranged with their supervisor to leave their work area for the purpose of handling a grievance. Either party may call in any witnesses they desire in an effort to reach a satisfactory settlement and witnesses shall be made available as provided for in this section.

SECTION 8-8: Business Agents and Union Representatives. Representatives and Business Agents of affiliated unions who are not Company employees may at their option participate at the 3rd Step of the Grievance Procedure.

SECTION 8-9: Arbitration Awards. A monetary award made with the arbitrator's authority will be paid to the grievant within fourteen (14) calendar days after receipt of the arbitrator's decision.

ARTICLE IX

Wages and Benefits

SECTION 9-1: Wage Rates. The wage rates which are to be effective during the term of this Agreement are attached hereto and incorporated herein as Appendix A. The rates set forth in Appendix A shall be made effective on March 1, 1994.

SECTION 9-2: Payday. Payday will normally be the Thursday of each week except: (1) when a holiday falls on Thursday, payday will be at the end of the day shift on Wednesday: (2) when two holidays occur within the normal work week, payday may be at the end of the day shift on Friday.

SECTION 9-3: Benefits. The Company will offer the benefits plans described in Appendix B.

SECTION 9-4: Payweek. The payweek shall begin 11:00pm Sunday and ending 11:00pm the following Sunday with the exception of the regularly scheduled afternoon shift in which case the work week will end at 11:30pm on Sunday.

ARTICLE X

Union Membership, Security and Representation

SECTION 10-1: FAT&LC Membership. It shall be a condition of employment that all employees of the Company covered by this Agreement who are members of the FAT&LC in good standing on the effective date of this Agreement shall remain members in good standing and those that are not members on the effective date of this Agreement shall, on the 31st work day following the effective date of this Agreement, become and remain members in good standing in the FAT&LC. It shall also be a condition of employment that all employees covered by this Agreement. and hired on or after its effective date, shall, on the 31st work day following the beginning of such employment, become and remain members in good standing in the FAT&LC. "Good standing" for the purpose herein shall mean the tender of periodic dues, initiation fees, and assessments uniformly required by the FAT&LC as a condition of acquiring or retaining membership in the FAT&LC. The Company will, within three (3) working days after it has been definitely established by written notification from FAT&LC that an employee is not in good standing, discharge such employee not in good standing as required in the aforementioned paragraph.

SECTION 10-2: Check-off. The Company agrees to make payroll deductions from the earnings of each employee in the bargaining unit as requested on a valid, individually and voluntarily executed Check-off Authorization Form. The Company's obligation shall be limited to forwarding all money so deducted to FAT&LC on a monthly basis, along with a list of the amount deducted from each employee's earnings.

SECTION 10-3: Indemnification. This Article shall be applied in compliance with the National Labor Relations Act and all other applicable laws and FAT&LC agrees that the Company will suffer no loss from the application of this Article and FAT&LC will accept any liability which may accrue.

SECTION 10-4: FAT&LC Representatives. Authorized representatives of the FAT&LC or the affiliated unions who are not the Company's employees will be permitted access to the site to conduct FAT&LC business in accordance with established visitation, security and safety rules provided they do not interfere with the progress of the work.

SECTION 10-5: Company Paid FAT&LC Officers. The FAT&LC officials specified below shall be paid eight hours per day, forty (40) hours per week Monday through Friday to conduct FAT&LC business. The said officials will be President, Vice President, Financial Secretary, and Recording Secretary. FAT&LC shall appoint a full time Company paid safety representative, training and employee certification coordinator and two (2) CPI Representatives. These representatives shall be paid at the regular rate of pay for their respective classification.

Further it is agreed that the present practice of providing the current facility for the use of FAT&LC with its ancillary furnishings, equipment and supplies shall be continued for the duration of the labor Agreement.

SECTION 10-6: Negotiating Committee. The FAT&LC Negotiating Committee shall be composed of six (6) elected members and chaired by the President of the FAT&LC in accordance with provisions of the Constitution and By-Laws of the FAT&LC. The President shall call, at his/her discretion, any other member of the Council as advisors. The Negotiating Committee shall be paid at their appropriate contractual rate while performing duties in connection with the negotiation process.

SECTION 10-7: Stewards. The names of stewards, Union Grievance committeeperson and alternates will be given in writing to the Company. No steward, committeeperson, or alternate shall function as such until the Company has been advised of the selections.
The Company will permit each Steward sufficient time to perform the duties inherent in a Steward's responsibilities but a Steward shall not leave the assigned work area without first obtaining permission from the supervisor and stating the destination, the purpose for leaving and the estimated time before returning. Permission to leave the work area will not be unreasonably withheld.

SECTION 10-8: Bulletin Boards. The Company shall furnish four bulletin boards, each of which shall be no less than 25 square feet, as needed by FAT&LC for its exclusive use. As conditions on the site change, these bulletin boards may be relocated with approval of FAT&LC. The Company will recognize two (2) stanchions for distribution of FAT&LC member communication bulletins.

SECTION 10-9: Distribution of Literature. FAT&LC or its affiliates may distribute literature related to their obligations or responsibilities as the bargaining representative or affiliates respectively for employees covered by this Agreement immediately outside the turnstiles to the Project or any non-work area on any non-work time. FAT&LC and its member Local Unions agree not to distribute other materials on the FEMP site.

SECTION 10-10: New Employee Orientation. A one (1) hour orientation for new employees by FAT&LC representatives will be scheduled during the first week of employment.

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ARTICLE XI

Paid and Unpaid Time Off

SECTION 11-1: Holidays Recognized. The following eleven (11) holidays shall be observed:

New Year's Day	Veteran's Day
President's Day	Thanksgiving Day
Good Friday	Day after Thanksgiving
Memorial Day	December 24th
Independence Day	Christmas Day
Labor Day	

Should a holiday fall on a Sunday, the following Monday shall be observed as the holiday. Holidays which occur on a Saturday will be observed on the preceding Friday. Monday holidays shall be observed in keeping with Federal Law. When Christmas Eve day falls on a Saturday or Sunday, it will be observed on the preceding Friday. When Christmas Day falls on a Saturday, it will be observed as a holiday on the preceding Thursday.

SECTION 11-2: Holiday Pay. Employees will be paid their normal hours at straight time rate for holidays. To be eligible to receive holiday pay, any employee must actually work his regularly scheduled shift or take a vacation day prior to and/or the day after the holiday, unless otherwise specifically excused by the Company or if an employee is absent due to an occupational illness or injury, or is absent not in excess of thirty (30) days because of an approved leave of absence or is not in excess of thirteen (13) weeks because of a non-occupational illness or injury. An employee laid off or recalled within the workweek in which holiday occurs shall receive holiday pay for that day providing they work all of the scheduled workdays within that workweek. An employee will not be required to work, and shall receive holiday pay, if there is another qualified employee in the same job classification in the same Group who is willing to accept work and there is no additional expense to the Company as a result of the change.

SECTION 11-3: Vacation Pay/Time Off With Pay.

A. FAT&LC employees are eligible to receive a paid vacation as shown below (See FERMCO policy HR-301):

Length of Service	Vacation Pay
6 mos. but less than 1 year	5 days (40 hrs)
1 - 5 years	10 days (80 hrs)
5 - 15 years	15 days (120 hrs)
15 - 20 years	20 days (160 hrs)

20 - 30 years	25 days (200 hrs)
30+ years	30 days (240 hrs)

B. Vacations are scheduled by the Company and preference as to vacation dates will be given employees in each job classification in accordance with their plant seniority. Each employee must state three (3) vacation preferences for each week of vacation eligibility in writing prior to March 1 of each year. All vacation requests for time less than one full work week are to be requested 24 hours in advance. An employee who wishes to change his original selection will be permitted to do so at a later date, but will be required to submit such a change of preference (1) day in advance of the proposed, new vacation date unless the change affects another individual who has previously scheduled the same requested days, then ninety (90) days prior notification is required.

C. If an employee becomes aware of a disability which occurs during a scheduled vacation he/she will be permitted to select another available date for vacation if such disability occurs prior to the commencement of the originally scheduled vacation.

D. If any of the holidays mentioned in Section 11-1 falls during an employees vacation period, the employee shall receive an additional day of vacation with a days pay based on his straight time hourly rate, excluding all premiums, which will be paid in the regular weekly paycheck for the period during which the holiday occurs. Employees may receive their vacation pay on the payday prior to their leaving for vacation, provided that they are eligible for such pay at that time.

E. An employee will not be required or permitted to work any of the days falling within the Monday through Sunday period in which he/she takes a whole week vacation.

F. Vacation may be accrued up to two (2) years but if not taken within those two (2) years the time is forfeited.

SECTION 11-4: Time Off for Vacation. Employees shall be eligible to take the vacation time determined under Section 3 above off from work with pay. Vacation may be taken in increments of hours, days or weeks consistent with the needs of the project with advance approval from the Company.

SECTION 11-5: Vacation Pay Upon Termination. An employee who terminates and who has been an employee of the Company for more than one (1) year shall, if eligible, receive pay for any vacation to which he is entitled by Section 3 of this Article if such vacation has not been taken. Employees who terminated in a calendar year in which they have already

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worked 1040 hours shall receive a prorated portion (based on the number of hours worked including overtime hours compared to 2080), minus untaken holidays and number of weeks vacation of eligibility of the vacation pay earned during the year in which the employee terminates.

SECTION 11-6: Leaves of Absence. Unpaid leave of absence for FAT&LC members shall be granted (by hour, day(s) or week(s)) for the purpose of attending Union meetings, councils, conferences or conventions or other Union business. Request must be made at least one week in advance whenever possible and if no unforeseen circumstances prevent it.

A. Unpaid personal leave may be granted, up to a maximum of one (1) week, for marriage or other special reasons.

B. Unpaid family leave will be granted according to law (see Appendix B (7) for more information).

C. Paid leave will be granted when an employee is required to miss work in order to appear (except as a party) in legal, administrative hearings or attend workers compensation hearings. However, an employee must report for work if such duties do not consume more than four (4) hours of his shift.

SECTION 11-7: Leaves of Absence for Union Business. Upon certification that any employee covered by this Agreement has been elected, or appointed to, a position in the Union, its affiliates, or the parent organizations of any of the affiliates, necessitating a leave of absence, such leave of absence without pay, but without loss of seniority shall be granted for a period of up to two (2) years. Such leave for subsequent two (2) year periods shall be renewed upon timely request.

SECTION 11-8: Disability Pay. Any employee who is absent from work due to an occupational disability arising out of their employment at the Project, will be paid the difference between Worker's Compensation and his straight time hourly rate, not to exceed 8 hours per day or 40 hours per week, for a maximum of 26 weeks, subject to the following:

A. The injury must not be purposely self-inflicted, the result of willful misconduct, the result of violations of plant rules or the refusal to use appropriate safety devices.

B. If an employee is absent from work due to reasons outlined in A above, he shall not be eligible to receive any such disability payments if he would have been otherwise laid off during the same period due to a reduction in force or absent for any other reason.

C. To be eligible for payment under the provisions of this Section, an employee must have reported the injury or other cause of disability to his supervisor immediately following its occurrence or at the time he recognizes an injury or disability and must comply with the existing disability pay procedure and with other Company requirements pertaining to occupational injuries. Payment as provided in this Section will be made upon final determination by a Company Physician that the employee's disability conforms to the American National Standards Institute Code unless this is in conflict with the Worker's Compensation Law of the State of Ohio, in which case the latter shall apply.

SECTION 11-9: Military Service-Training Pay. Any employee who is a member of a reserve unit of the Armed Services of the United States will be granted a period not to exceed sixteen (16) calendar days for training purposes with pay in an amount equal to the difference between his/her military compensation and his/her normal straight-time hourly rate which would normally be received for the service with the Company during this period. An employee who has an approved vacation date will not be required to change his/her vacation date in order to permit another employee to enter military reserve training. This provision shall not apply if more than one person is affected in any one seniority unit or in the event of a national emergency. (For more information see FERMCO Policy HR-303).

SECTION 11-10: Military Service Allowance. An employee who enters active military services shall receive pay on the basis of his straight-time hourly rate as follows:

SERVICE	BENEFIT
1 - 2 years	2 weeks' pay (80 hrs)
2 - 5 years	1 months' pay (173 hrs)
5+ years	2 months' pay (346 hrs)

Employees with one (1) or more years service with the Company who enter active military service for a period of six (6) months or less will be eligible for a pay allowance of two (2) weeks (80 hrs) at the straight-time hourly rate. (For more information see FERMCO Policy HR-303).

SECTION 11-11: Jury Duty. An employee summoned for jury duty or subpoenaed to serve as a witness (not as a plaintiff or defendant) will be excused from work upon presentation of the court notice to his/her immediate supervisor. When the employee who has been excused returns to work, he/she will be paid the difference between his normal straight-time earnings and the fees received from the court for the dates served. Only the number of days actually spent in court are counted in calculating payment. If an employee is not required to attend the court beyond 11:00am, he will be expected to report for work as soon as he is dismissed if he is assigned to either the afternoon or night shift. If an employee assigned to any shift is required to attend the court beyond 11:00am, he will not be required to report to work, and will be paid the difference in pay between his normal straight-time earnings and the fees received from court.

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SECTION 11-12: Funeral Pay. An employee will be granted an excused absence for such time as may reasonably be needed for the purpose of attending the funeral of a member of his/her immediate family and will be paid his normal straight-time hourly rate for any or all three regularly scheduled work days (Mon.-Fri.) during the period beginning with the day of death and ending with the day after such funeral. In case of an employee on a varying day off schedule, the payment will be made for time lost during the employee's established five-day work week. To be eligible for payment, an employee must produce some evidence of said death in the form of public notice or its equivalent. "Immediate family" shall be construed to mean husband, wife, child, mother, father, brother, sister, stepchild, stepmother, stepfather, grandchild, mother or father of wife or husband, foster parents, son-in-law, and daughter-in-law and grandparents of employee or spouse.

ARTICLE XII

Working Conditions

SECTION 12-1: Efficient Utilization of Labor. In the interest of completing the mission of the FEMP, the FAT&LC and the Company jointly pledge to work together to produce the most efficient utilization of labor and equipment on the project site in accordance with this Agreement.

SECTION 12-2: Tools of the Trade. Even when the employee is trained and qualified to use such tools in the performance of their work, such utilization shall only be incidental to the completion of their work.

SECTION 12-3: Work Clothing. The Company will provide work clothing, in the process and non-process areas of the project, without cost to the employees.

SECTION 12-4: Emergency. For the purpose of this Agreement, an emergency shall be defined as a situation arising suddenly, which would endanger life, property, environment or would unduly interfere with normal production if not immediately remedied.

ARTICLE XIII

Joint Labor Management

SECTION 13-1: Creation and Purpose. The parties to this Agreement hereby recognize the necessity of communication and the elimination of disputes, misunderstandings, or applications of this agreement that seriously impact the continuity of projects. To secure this end, it is hereby agreed that a Joint Labor Management Committee shall be established ,to be composed of the Company and the FAT&LC, which shall meet as required and as mutually agreed. They shall bring up any practice which, in their opinion, might lead to misunderstandings or disputes between the signatory parties.

SECTION 13-2: Meetings and Agenda. The Company's Manager of IR and the President of the FAT&LC shall jointly chair the Joint Labor Management Committee. The Company and FAT&LC shall jointly coordinate Joint Labor Management Committee activities, develop procedures of operation, publish meeting agenda and issue minutes of each meeting. Standing agenda items for the Joint Labor Management Committee meeting shall include, but not be limited to: cost and efficiency, Continuous Performance Improvement (CPI) and Total Quality Management (TQM), manpower requirements and training.

SECTION 13-3: Limited Powers. The Joint Labor Management Committee shall not be used for the purpose of arriving at any agreement to supersede, alter, modify, amend, add to or detract from this Agreement. Neither shall the Joint Labor Management Committee be a substitute for, nor a means of circumventing, the Grievance and Arbitration Procedure.

ARTICLE XIV

Modification and Savings Clause

SECTION 14-1: Modifications. The provisions of the agreement shall be conclusive as to all bargainable matters relating to wages, hours of work, and working conditions, except that rates of pay for new classifications are bargainable. Therefore, the Company and the FAT&LC, for the duration of this agreement, each agree that the other shall not be obligated to collectively bargain with respect to any subject matter referred to or governed by this Agreement, except as set forth in Article XIX, unless the Company and the FAT&LC mutually agree to alter, amend, supplement, enlarge, or modify any of the provisions of this agreement.

SECTION 14-2: Savings Clause. In the event any of the conditions of the Agreement shall be or become invalid or unenforceable by reason of any Federal or State law, now existing or hereinafter enacted, or by reason of any court decision, such invalidity or uninforceability shall not effect the remainder of the provisions of this Agreement.

SECTION 14-3: Changes in Work. The Company will advise and consult with the FAT&LC concerning any new technological developments, processes or basic changes in work methods which will have an impact on the FAT&LC represented work force. Should such changes result in the creation of new jobs or classifications, a new rate shall be negotiated between the parties. If no agreement is reached the Company may establish the rate and implement the job, but the classification and rate may be referred to the grievance and arbitration procedure.

ARTICLE XV

Hours of Work, Overtime, Shifts, and Premium Pay

SECTION 15-1: Normal Hours.

A. The normal work week shall be forty (40) hours. The normal workday shall consist of eight (8) hours of work. The normal work shifts shall be 7:00am to 3:30pm; 3:00pm to 11:30pm; 11:00pm to 7:30am. Shifts shall be established and continued for a minimum of five (5) consecutive work days and if Saturday and/or Sunday are worked, they shall be included in the five (5) day minimum period. Off days shall be scheduled consecutively.

B. Schedules which are negotiated having starting times not in excess of two (2) hours prior to the normal starting time mentioned in (A) of this section shall be paid on the basis of the rate applicable to the day in which the majority of the hours fall.

C. Changes in the normal hours defined in this section may be made only after mutual agreement between the Company and the FAT&LC.

SECTION 15-2: Work Schedules. Due to the unanticipated conditions which will be encountered at the FEMP, the following work schedules are recognized.

A. For the purpose of this Agreement, the following work schedules are recognize:

1. 5-day coverage--1, 2, or 3 shifts--Monday through Friday--fixed shifts
2. 5-day coverage--1, 2, or 3 shifts--rotating shifts
3. 6-day coverage--3 shifts--fixed shifts--varying off days
4. 7-day coverage--rotating shifts
5. 7-day coverage--1, 2, or 3 shifts--fixed shifts--varying off days
6. 4-day coverage--10 hour shifts--1 or 2 fixed shifts
7. 5-day coverage--10 hour shifts--1 or 2 shifts fixed shifts

B. The assignment of employees to fixed shifts (mentioned in Nos. 1, 3, and 5 above) and including special shifts shall depend on individual preference, to be determined by seniority within the job classification. Such an assignment shall apply only to a recognized shift, and seniority cannot be applied to select a particular work schedule as such. However, the Company will make every effort to assign work on premium days within a classification to employees within such classification as equally as practicable. The employee assigned to a particular shift shall remain on that shift until he is eligible for a transfer

under Article 15, Section 15-4 of this Agreement.

C. The Company agrees to discuss with the FAT&LC the necessity for schedules Nos. 1, 3, or 5 prior to establishing such schedules.

D. The establishment of schedules Nos. 1,2,4,6, or 7 in situations other than those now existing, or the modification of such schedules which now exist, shall be by mutual agreement. Special shift work provisions for employees supporting continuous operation may be established by joint agreement between the Company and FAT&LC.

E. In the event that operating conditions of the plant change and it becomes necessary to establish regular working schedules other than those now in effect, they may be established by mutual agreement.

F. Employees may trade shifts or days off with prior approval of their supervisor.

G. The establishment of schedule No. 6 shall be: The first shift shall be four ten hour days, Monday through Thursday with a thirty minute unpaid lunch break. The second shift, if utilized, shall be ten hours at the basic straight time hourly rate plus the shift differential, with a thirty minute unpaid lunch break.

H. The establishment of schedule No. 7 shall be: Five ten hour days, Monday through Friday, with first and second shifts consistent with Option G above.

SECTION 15-3: Shift Assignments. Shift assignments will be made based upon job classification seniority, training, and qualifications. When necessary to properly staff the assignment, the Company may reassign employees in a job classification to another shift with the least senior employee being reassigned first.

SECTION 15-4: Shift Change Request. An employee who is working on a fixed shift basis may, by written application, exercise the privilege of selecting a shift, within his/her assignment and in his/her job classification providing he/she has enough job classification seniority to displace another employee of the same classification and provided he/she is trained and qualified. An employee may request a shift change not more than one (1) time every six (6) months within his/her classification. If necessary, the junior employee will be reassigned to the vacancy.

SECTION 15-5: Shift Differential.

A. Employees starting to work on a shift beginning between 4:00 a.m. and 12:00 noon shall be considered to be working on the day shift and shall receive no shift differential.

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B. Employees starting to work on a shift beginning between 12:00 noon and 8:00 p.m. shall be considered to be on the second (2) shift and shall receive a shift differential of thirty-five cents per hour ($0.35).

C. Employees starting to work on a shift beginning between 8:00 p.m. and 4:00 a.m. shall be considered to be working on the third (3) shift and shall receive a shift differential of forty-five cents per hour ($0.45).

SECTION 15-6: Overtime Assignment. Overtime shall be offered first to those employees qualified, trained and available having the least accumulated overtime on the current weekly overtime priority roster. Whenever an employee is offered work and declines it, it shall be considered in the record for equalizing overtime work as though that employee had availed himself/herself of the opportunity for such work. Employees shall be charged for overtime for which they were unavailable for the first two (2) weeks, due to injury, illness or personal leave of absence. Upon their return, they shall be placed in the same relative standing as when the two weeks has lapsed.

The overtime record for each employee shall be kept within the employee's overtime sharing group. This overtime record shall be kept up to date on a daily basis. This weekly overtime priority roster shall be referred to by the supervisor in the distribution of overtime. Overtime shall be equalized on a weekly basis to the degree possible for the duration of the Agreement. Make up overtime shall not be a remedy for misassignment of overtime.

Overtime work, Saturday, Sunday, and Holidays shall normally be assigned to the employee on the basis of the shift they regularly work unless it is necessary to assign an employee to another shift to equalize combined overtime and premium pay. For the purpose of this procedure, premium pay for work performed on Saturdays and Sundays, as such, and Holidays will be recorded with overtime. However, only that portion of payment beyond the straight time rate will be considered when those days are part of the normal work schedule.

If the spread in accumulated overtime exceeds 150 or more hours within any classification because of difference in shift, the company shall arrange to correct the disparity by assigning overtime for the low hours employee on another shift as the need for overtime exists. Employees shall not be charged for overtime hours which occur during their vacation.

Each time a new assignment is identified, those employees assigned will start at zero (0) overtime hours. Upon returning to their classification, their overtime standings at that time shall be added to their classification overtime hours.

The overtime priority roster shall be structured to segregate regularly accumulated overtime hours from overtime hours accumulated while on assignment outside the overtime sharing group.

The weekly equalization period shall be Tuesday through Monday.

The overtime priority roster(s) shall be prominently posted for inspection by the respective work groups in a manner which protects its integrity.

Employees receiving a bid or being upgraded to a new classification or overtime sharing group shall be placed on the overtime priority roster 1/10 of an hour above the highest number of hours accumulated on the roster for that particular work group only, not to the hours accumulated by employees while working on an assignment outside the group.

For the purpose of this procedure, overtime and premium pay work records will be maintained and such work shall be equalized for periods of one (1) calendar year, beginning on January 1 and ending December 31 of each year. At the start of each year, the overtime list shall be adjusted to reflect the difference in hours between the high man and low man on the overtime list. The low man on overtime hours shall return to zero (0) hours and the rest of the employees in the group will be added to the list accordingly, with the difference of overtime hours remaining the same to start the new year.

SECTION 15-7: Overtime and Premium Pay. Overtime shall be paid at the rate of time and one half (1 1/2) for all hours worked outside the established shifts or in excess of forty (40) hours per week. All work on Saturday shall be paid at time and one half (1 1/2). and all work on Sunday shall be paid at double (2) time. All consecutive work performed in excess of twelve (12) hours shall be paid at double (2) time. All work on holidays shall be paid at time and one-half (1 1/2) plus holiday pay, the rate of three (3) times the regular rate of pay shall be paid for all time worked in excess of the regular scheduled shift. If an employee is not required to work on a holiday which falls within his/her regularly scheduled workweek, the time he/she would have normally worked shall be included in computing overtime. Holidays falling on an employees regular day off shall not be included in computing overtime.

SECTION 15-8: Pyramiding of Premium and/or Overtime Pay. The allowance of overtime or premium payment on any hour for which an employee receives overtime or premium compensation eliminates that hour from consideration for overtime or premium payment on any other basis. If it falls under two (2) or more overtime and/or premium pay classifications, the higher rate shall prevail.

SECTION 15-9: Lunch Period. All employees shall be allowed a 30 minute nonpaid lunch period in conjunction with the travel, shower, and clothing change time allowances provided in Section 15-10 of this Article. Meal schedules shall be originated by the Company.

SECTION 15-10: Travel, Shower, and Change Time. All employees except those covered by paragraph "A" shall be paid their regular rate of pay for travel, shower, and clothing change time in accordance with the following schedule.

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TIME ELEMENT	PROCESS* OR NON-PROCESS*
AT START OF SHIFT***	10
LUNCH**	15
AT END OF SHIFT	10

* The process area is interpreted to mean that area north of the fence behind the Services Building, garage, heavy equipment buildings, the Pilot Plant and K-65 areas. The non-process area is interpreted to mean the Administration, Laboratory, Services, Health and Safety, Personnel, Security Buildings, and the Guardhouse and trailer complexes.

** Does not include the 30-minute non-paid lunch period.

*** An equivalent amount of travel time will be allowed to those employees who have been excused to report to the Medical Services Section for treatment during their regular shift and who are required to change clothes prior to returning to their work area. An employee reporting to Medical Services Section prior to the start of his/her shift will not be considered tardy if he/she arrives at their work area within the time allowance designated in (1) above plus credit for the time he/she rang into the Medical Services Section in advance of his/her starting time, not to exceed a total of five minutes.

A. Employees who elect to remain in their assigned work area during the scheduled lunch period shall not be permitted time in excess of the 30-minute nonpaid lunch period.

SECTION 15-11: Reporting for Work. Employees who report for work on their regular shift without being notified not to report, will be given four (4) hours work in their respective classifications, or in one which is reasonably comparable, and which will not deprive others of that classification of work, and/or four (4) hours pay at the applicable rate. This provision does not apply in case of a shutdown beyond the control of the Company. Failure on the part of an employee to keep the Company informed of his current address and telephone number will relieve the Company of its responsibilities under this Section of the Agreement. Employees who report change of address, telephone number, car license or registration shall be given a written acknowledgement of the Company's

receipt of this information.

Employees who are scheduled and report for work outside their regular shift will be guaranteed a minimum of four (4) hours work and/or four (4) hours pay at the applicable rate. This provision does not apply if an employee is scheduled for and works overtime in conjunction with his/her regular shift.

SECTION 15-12: Reporting Off from Work. All employees shall report their absence to the Company prior to the start of his/her shift. Upon reporting their absence, a code number will be given to them for verification of reporting in.

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ARTICLE XVI

Seniority/Company Service

SECTION 16-1: Plant Seniority. Plant seniority is the period of time measured in years, months, and days that an employee has been on the active or inactive payroll dating from the last date of hire.

SECTION 16-2: Classification Seniority. Classification seniority is the period of time measured in years, months, and days that an employee has been in the job classification.

SECTION 16-3: Company Service. Company service shall prevail in the administration of vacations, welfare benefits, and related items. Company Service shall mean the length of time measured in years, months, and days that an employee has been continuously employed by the Company within the bargaining unit and shall date from the employee's last date of hire.

SECTION 16-4: Qualifications. The Company shall determine and establish the minimum qualifications for all jobs, see Article III, Section 3-4.

SECTION 16-5: Transfer out of Bargaining Unit. On a one-time per career basis, a bargaining unit employee who accepts a non-bargaining unit position with the Company shall for one (1) year retain all seniority accumulated to the date of change and, in the event the employee elects or is removed from the non-bargaining position for reasons other than discipline or discharge, may return to a position for which he/she has seniority to acquire.

SECTION 16-6: Reductions in Force (Layoffs). During a reduction in force (RIF), employees shall be retained on the basis of job classification seniority within the classification (see Memorandum of Agreement No. 6).

SECTION 16-7: Bumping Rights. In keeping with the principle of seniority, in a Reduction in Force (RIF), the employee(s) in any classification shall be reduced in the reverse order of classifications held. The bumped employee(s) shall likewise exercise their option(s) to bump accordingly until ultimately the work force is reduced by the requisite number.

SECTION 16-8: Accruing Seniority. Seniority accrued in a classification shall be retained in that classification as long as the employee remains in the group in which that classification falls. However, in the application of Article XVII, an employee who bids to another group in accordance with Article XVII Section 17-4 and, as a result of a force reduction, returns to his former group, shall be credited with accrued job classification seniority in the classification held prior to this transfer and accumulated job classification seniority during the period of time he remained in the group to which he had bid.

SECTION 16-9: Recall. Laid off employees shall retain recall rights for a period of 24 months or length of service, whichever is less. Recall shall be done by job classification seniority in the reverse order of layoff. Upon receipt of notification of recall, the employee must respond to the Company within three (3) days (exclusive Saturdays, Sundays and holidays). Employees have the responsibility to inform the Company of current telephone numbers and addresses.

SECTION 16-10: Union Officers' Seniority. For purposes of force reduction and recall only, the President, Vice-President, Financial Secretary, Recording Secretary and members of the Union Grievance Committee will have top seniority during the tenure of their office.

Such special seniority shall not be applicable to plant shutdown of one day or less, but shall be applicable to permanent force reductions. It is also understood that such special seniority shall not be considered a privilege for retaining a given job classification but shall pertain to job retention only.

The President of the FAT&LC shall have day shift preference during his tenure in office.

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ARTICLE XVII

Promotions, Transfers and Temporary Assignments

SECTION 17-1: Definitions. The following definitions are to be used in the application of this Article.

A. Promotions: A promotion is a permanent assignment to a higher paid classification.

B. Transfers: A transfer is the permanent assignment of an employee to another classification at an equal or lower pay rate.

C. Temporary Assignments: A temporary assignment is the assignment of an employee to a different job classification for no more than six (6) weeks within the work group. It may not be used to avoid filling a vacancy. Employees on temporary assignments will receive the higher of their regular pay rate or the pay rate for the classification to which they are temporarily assigned.

D. Job Opening: A job opening is a classification vacancy.

E. Assignment Vacancy: A vacancy that occurs within the assignment.

SECTION 17-2: Promotions. Employees shall be promoted to a higher paid classification based on seniority and qualifications within the promotional lines identified in Appendix C.

SECTION 17-3: Demotions (Voluntary). An employee's request to be demoted to a lower job classification in his line of promotional succession or reduction (see Appendix "C") shall be subject to the following conditions:

A. If the request is based upon a bona fide medical reason involving the employee, the demotion request shall be granted and the employee will accumulate job classification seniority in his/her former classifications during the period of demotion. The employee shall be restored to his/her former classification at the end of his/her period of illness or injury providing such right does not conflict with other seniority provisions of this Agreement.

B. If the request for demotion is based upon anything other than a bona fide medical reason, the demotion request will be granted but the employee shall not accumulate seniority in, or have recall rights to, any job classification higher in the line of promotional succession or reduction than the classification to which he/she is reduced. An employee who is voluntarily

demoted shall not be entitled to promotions or temporary assignments to higher classifications for twelve (12) months following the effective date of his demotion unless all other eligible qualified employees within the Group have been given prior consideration.

C. The Company reserves the right to require a qualified replacement before a request for demotion can be honored.

SECTION 17-4: Assignment Vacancies. When an employee leaves an assignment, a vacancy occurs. Should the Company choose to fill the vacancy, this will be filled by the most senior employee who has registered for placement to that assignment or by a junior employee(s) not already assigned.

An employee on an assignment shall be allowed to fill other assignment vacancies under the following conditions;

A. Must be on his/her assignment for at least one year,

B. Must sign the register for a particular assignment, and

C. There must be at least six (6) months remaining on his/her current assignment and in the assignment where the vacancy exists.

SECTION 17-5: Classification Vacancies. When a job opening occurs within a classification, the Company shall fill the position in the following order:

A. The most senior employee on the classification recall list.

B. The most senior employee within the promotional lines and work group.

C. The most senior qualified employee who has signed the register.

D. Most qualified employee as set forth in Article VI the Project Labor Pool.

SECTION 17-6: Eligibility. Incumbent employees who have satisfactorily completed six (6) months in their current work group and who believe they meet the established minimum qualifications for a different job classification in a different work group, may request consideration for any job opening that occurs in that new job classification in a different work group. This time limitation does not pertain to internal promotional lines.

SECTION 17-7: Procedure. To be considered for a different job classification an employee must sign a register of employees desiring consideration for jobs in that classification and, if requested, provide evidence that he/she meets the established minimum qualification for

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that job. Signing the register is a commitment by the employee to accept the assignment or job opening when assigned to it. The employee may withdraw his/her name if withdrawn prior to the designated deadline on the posting. The job register will be kept at the guard house. The Company will publish and make available a listing of job classifications that includes the number of jobs in that category, the minimum established requirements for the job, the pay rate for the job, and any other factors it considers pertinent.

SECTION 17-8: Qualifying Period. An employee selected to fill a job vacancy will be given fifteen (15) workdays on the job with proper instruction before final decision is made of his/her ability to perform the work. It is understood that where specific length of experience is one of the qualifications, an employee may have established the equivalent of such experience due to related job assignments while employed on the Fernald Project. If it develops at the end of the fifteen (15) workday period that he/she is not capable of handling the new job, the employee shall be entitled to return to his former job classification with his former status.

ARTICLE XVIII

Entire Understanding

SECTION 18-1: Entire Understanding. The parties agree that the total results of their bargaining and entire understanding between the parties is embodied in this Agreement. This Agreement shall not be amended or supplemented except by mutual consent of the parties hereto reduced to writing and duly signed by each.

ARTICLE XIX

Duration

SECTION 19-1: Duration. This Agreement shall become effective on the first day of March, 1994 and remain in full force and effect as otherwise provided herein until midnight of the twenty-eighth day of February, 1998 and shall automatically renew itself from year to year thereafter unless written notice to terminate or amend the Agreement is given by either party not less than 60 days prior to the expiration date or annual renewal thereof.

If notice of termination is given, negotiations for a new Agreement shall take place during the 60 days prior to the expiration.

If notice to amend is given, such notice shall set forth the proposed amendments and the parties shall promptly meet to negotiate with respect to the proposed amendments. In the event that negotiations for an amended Agreement shall continue beyond the expiration of the term of this Agreement, this Agreement shall continue in full force and effect, provided, however, that either party may then terminate this Agreement upon 60 days' written notice to the other party.

Fernald Atomic Trades and Labor Council, AFL-CIO (FAT&LC)	**Fernald Environmental Restoration Management Corporation (FERMCO)**
/s/ R. M. Schwab	/s/ M. J. Coleman
/s/ A. R. Callaway	/s/ P. L. Doherty
/s/ S. E. Collins	/s/ F. Peters
/s/ S. G. Rose	/s/ M. L. Townsend
/s/ W. A. Gutzwiller	/s/ S. L. Blankenship
/s/ A. L. Davis	/s/ E. L. Albright
/s/ J. J. Siciliano	/s/ S. L. Hinnefeld

Appendix A

Wages

Effective March 1, 1994, all employees covered by this agreement will be paid in accordance with the following schedules. These schedules reflect the first year increase of 4.5 percent.

Individuals hired after 3-1-94:

Pay Grade	Qualifying			Standard 12 Month
	Starting	6 Month	9 Month	
1	9.85	10.40	10.99	11.60
2	10.64	11.18	11.78	12.38
3	10.72	11.27	11.87	12.47
4	11.50	12.04	12.64	13.24
5	11.70	12.25	12.84	13.44
6	11.84	12.38	12.98	13.57
7	12.30	12.84	13.44	14.04
8	12.48	13.02	13.62	14.21
9	12.62	13.17	13.77	14.37
10	13.00	13.54	14.14	14.73
11	14.67	14.94	15.41	15.86
12	14.71	14.99	15.46	15.92
13	14.88	15.15	15.61	16.07

All current employees as of 3-1-94:

Pay Grade	Starting	Qualifying			Standard 15 Month
		3 Month	9 Month	12 Month	
1	8.22	9.85	10.40	10.99	11.60
2	9.00	10.64	11.18	11.78	12.38
3	9.09	10.72	11.27	11.87	12.47
4	9.86	11.50	12.04	12.64	13.24
5	10.07	11.70	12.25	12.84	13.44
6	10.21	11.84	12.38	12.98	13.57
7	10.67	12.30	12.84	13.44	14.04
8	10.85	12.48	13.02	13.62	14.21
9	10.99	12.62	13.17	13.77	14.37
10	11.37	13.00	13.54	14.14	14.73
11	13.59	14.67	14.94	15.41	15.86
12	13.63	14.71	14.99	15.46	15.92
13	13.79	14.88	15.15	15.61	16.07

		First Year	Second Year	Third Year	Fourth Year
Craft Apprentice	Present		85%	90%	95%
	Classification				
	Standard Rate				

Journeyman's standard rate upon successful completion.

All future incremental increases shown below shall be paid to those covered employees who are currently on the active payroll on the effective date of each respective increase.

March 1, 1995	3.5 percent
March 1, 1996	2.0 percent
March 1, 1997	2.0 percent

A $500 net ratification payment will be paid to all current actively employed FAT&LC represented employees on the second pay date following ratification.

Job Classification and Grade

Classification	Grade
Asst. Boiler Op. Helper	4
Asst. Pump Op.	4
Asst. Water Plant Op.	10
Boiler Operator	10
Boiler Operator Helper	6
Bulldozer Operator	8
Carpenter	12
Cook	2
Dry Cleaner	4
Electrician	13
HazWat	10
Heavy Equip. Operator	12
Industrial Mechanic	12
Instrument Mechanic	13
Instrument Technician	
Laborer	3
Laundry Worker	3
Machinist	12
Mason	12
Millwright	12
Motor Vehicle Operator	10
MVO/Sampler	10
Oiler	6
Painter	12
Pipefitter	12
Porter	3
Power Plant Oiler	6
Pump Operator	6
QA Checker	10
Rigger	12
Stationary Engineer	11
Storeroom Attendant	5
Utility Worker	1
Waste Water Plant Operator	11
Water Plant Operator	11
Welder	12

Appendix B

Benefits

The Company shall offer the following benefits to the FAT&LC membership:

(1) Medical Plan. As of April 1, 1994, the Company shall offer a third medical plan: HMO in addition to the current Plan A and Plan B. Plan A and Plan B are modified as follows: lifetime maximum increased to $1,000,000; family deductible may be obtained by any number of family members. Married couples family coverage shall include their spouse who is also employed by the Company. An entire family can now be covered by one employee.

(2) Dental Plan. This plan shall remain as currently in effect except as of March 1, 1994 the coverage is offered immediately upon hire.

(3) Life Insurance. Effective April 1, 1994, the Company shall offer a supplemental life insurance plan of which an initial 25% participation enrollment is required at that time. Also, effective this date, the Company shall offer a survivor option which requires an initial 20% participation enrollment at that time.

Employees who are in the grandfathered life insurance program can elect to go out of that program and elect either the supplemental life and/or the survivor option. Once they elect to go out, it is understood that they cannot re-enroll back into the grandfathered plan. The maximum under the grandfathered plan will now be $100,000.00 or 2X base annual earnings whichever is less. Every other provision under the life insurance program will remain as currently in effect.

(4) Short Term Disability. Effective April 1, 1994, the short term disability provisions stated below will replace the provisions under the Accident and Sickness plan (A&S plan). This is effective for disabilities of ten or more consecutive days. Anyone who is disabled prior to this effective date will continue to be covered under the A&S plan.

Service	Benefit
2 months - 1 year	1 month at 100%
1 year - 5 years	2 months at 100%, 4 months at 60%
5 years - 10 years	4 months at 100%, 2 months at 60%
10 years +	6 months at 100%

(5) Savings Plan (401K). This plan shall remain in effect as currently provided.

(6) Pension Plan. Effective March 1, 1994, the Company shall replace in its entirety the contributory retirement plan currently provided to FAT&LC represented employees with the FERMCO non-contributory salary pension plan. It is understood that the FAT&LC members will be provided the salaried formula for all participation service and the Company will guarantee that the future benefit will never be less than the frozen hourly benefit. This plan allows for retirement at age 60 with 30 years of service with no early retirement deduction and continuation of medical coverage and life insurance coverage upon retirement. Early retirement is also offered at age 55 with 10 years of service with an early retirement deduction, however, medical and life insurance coverage will continue. Employees in this pension plan will be fully vested after five years of service with the Company. A part of the calculation uses the average of the annual earnings as reported on the W-2 during the five highest paid consecutive calendar years within the last ten years immediately before the date of retirement or termination from the Company.

(7) Family Leave. The Company shall provide for unpaid time off from work for all current active FAT&LC employees with one or more years of service for the purpose of attending to a sick relative, birth or adoption of a child, or due to a serious health condition as mandated by law. The maximum amount of leave shall be 12 weeks for every 12 month period.

(8) Severance Benefits. All current active FAT&LC represented employees will receive severance benefits under the following conditions:

(a) involuntary/voluntary layoff
(b) retirement (participants in FERMCO pension plan)
(c) an employee who is terminated for medical reasons

This benefit is paid at 40 hours straight time rate for each full year of service.

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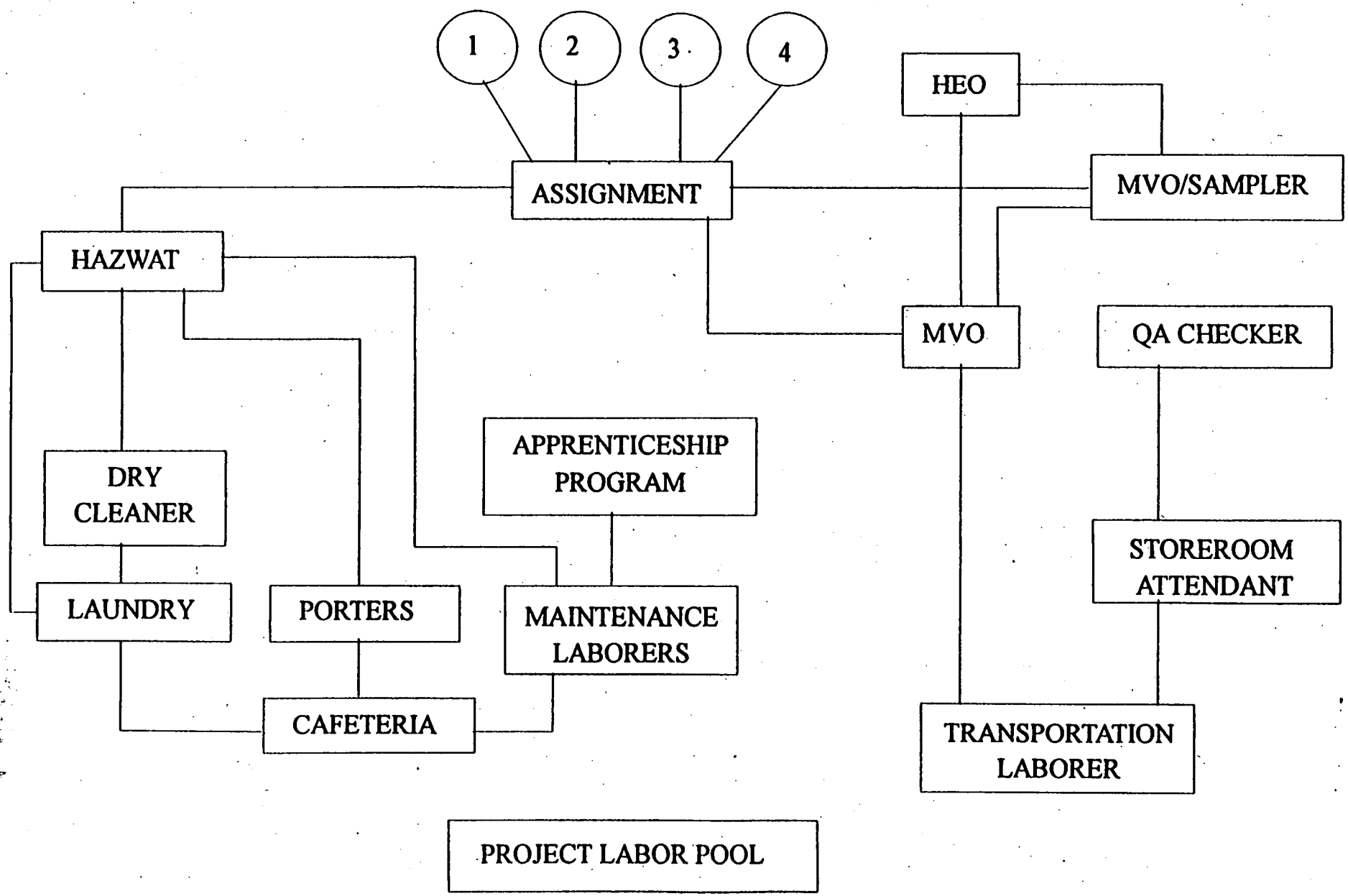
APPENDIX C

HAZWAT and HAZMAT ASSIGNMENTS



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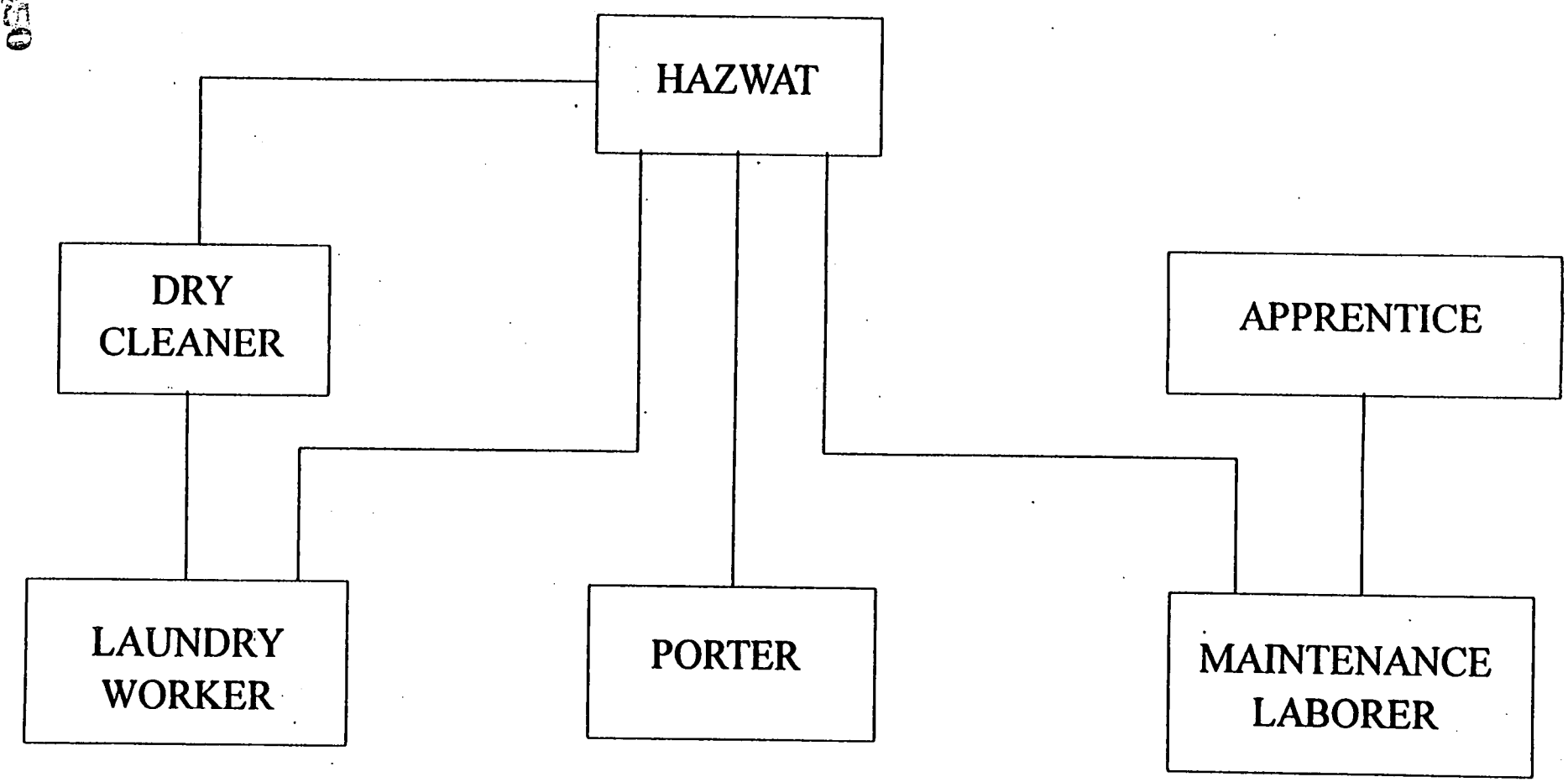
HAZARDOUS WASTE TECHNICIAN GROUP

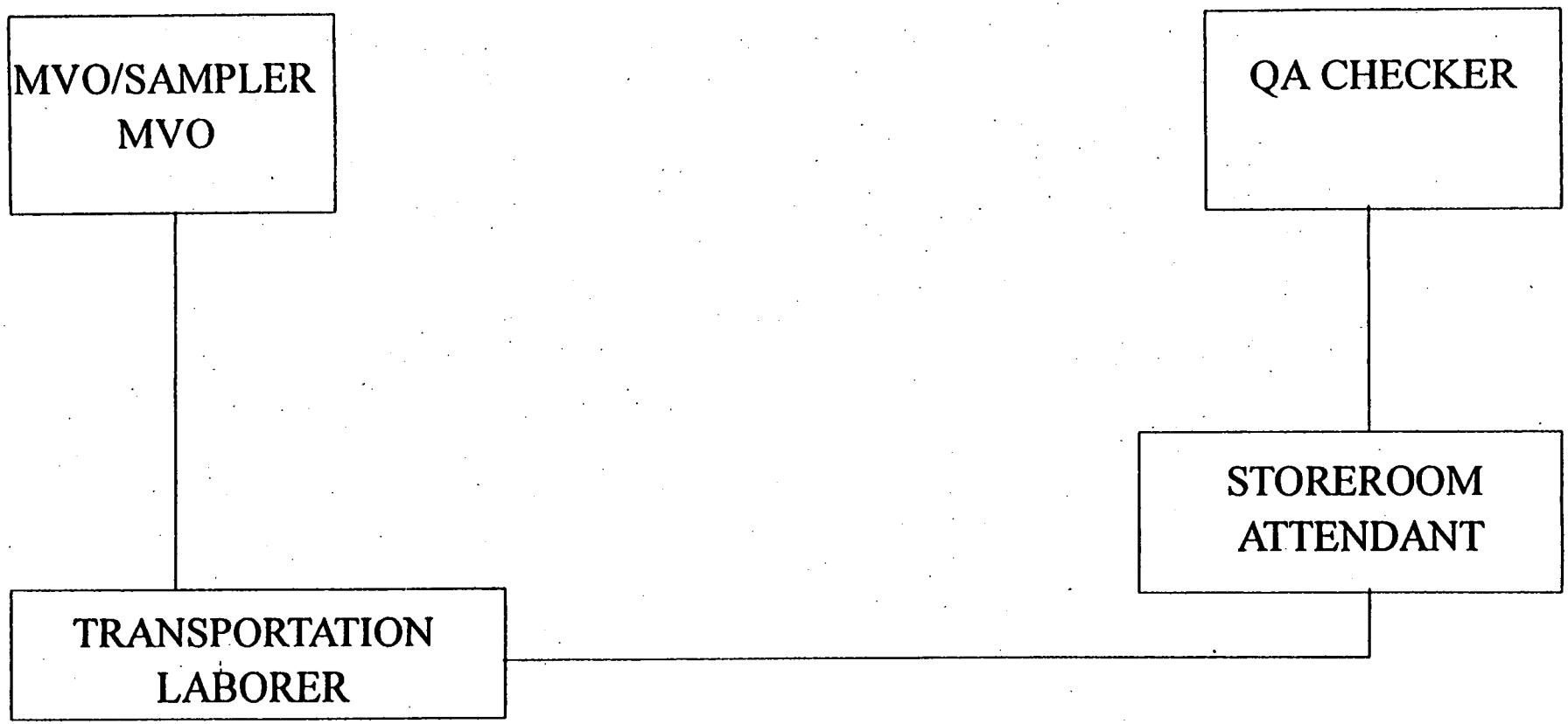
(HAZWAT)



NOTE: Promotional opportunities to HAZWAT classification will be selected by the oldest job classification seniority date held among any of the classifications within this group.

Separate overtime lists.

HAZARDOUS MATERIAL TRANSPORTATION GROUP
(HAZMAT)



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* Separate overtime sheets for each classification.

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HAZARDOUS MATERIAL MAINTENANCE, ABATEMENT AND DECOMMISSIONING REGULATORY TECHNICIAN GROUP

(HAZMAD)

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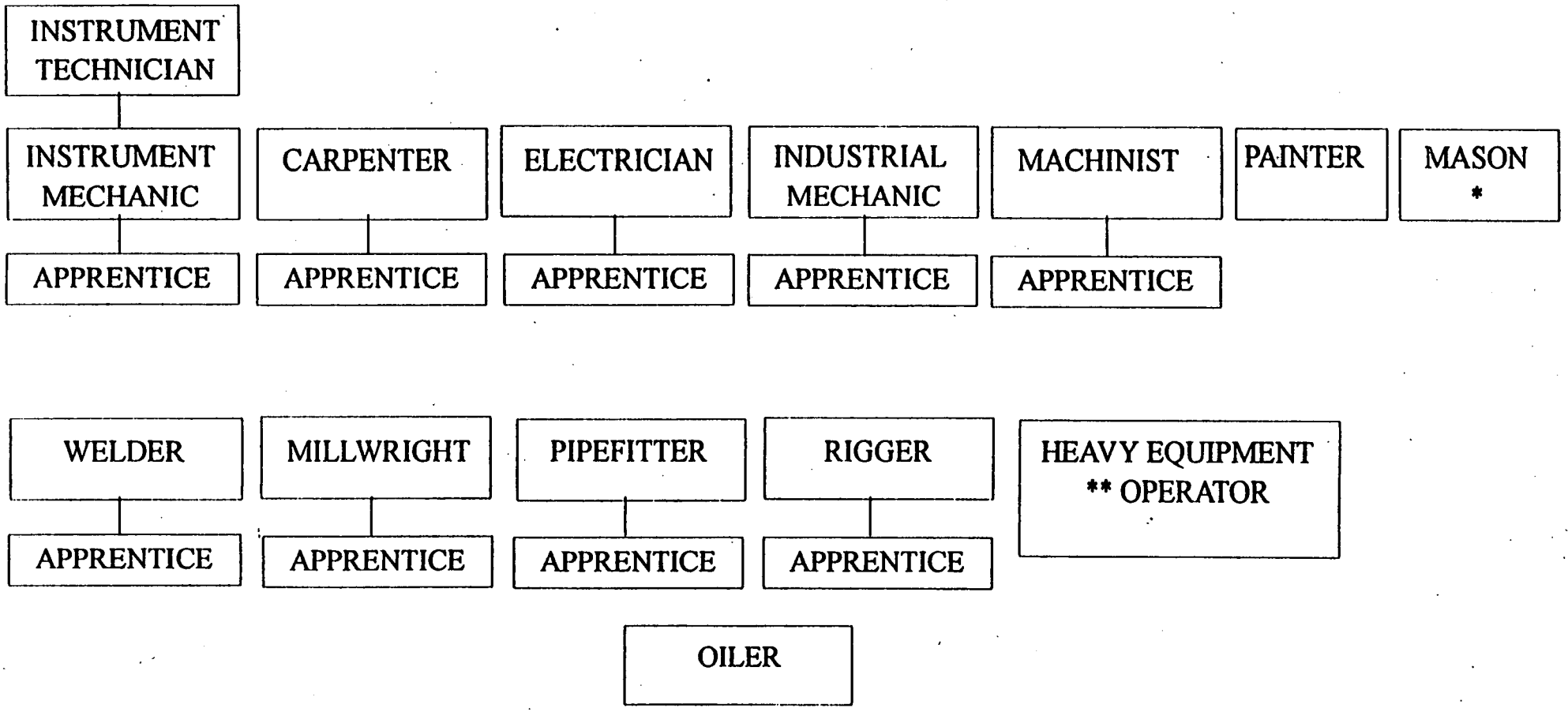
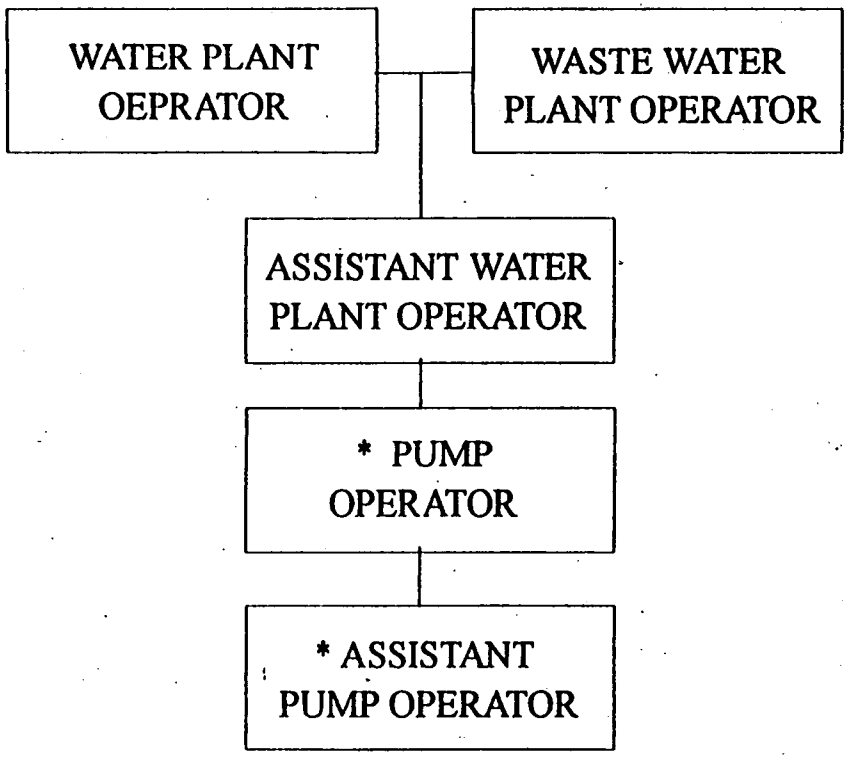


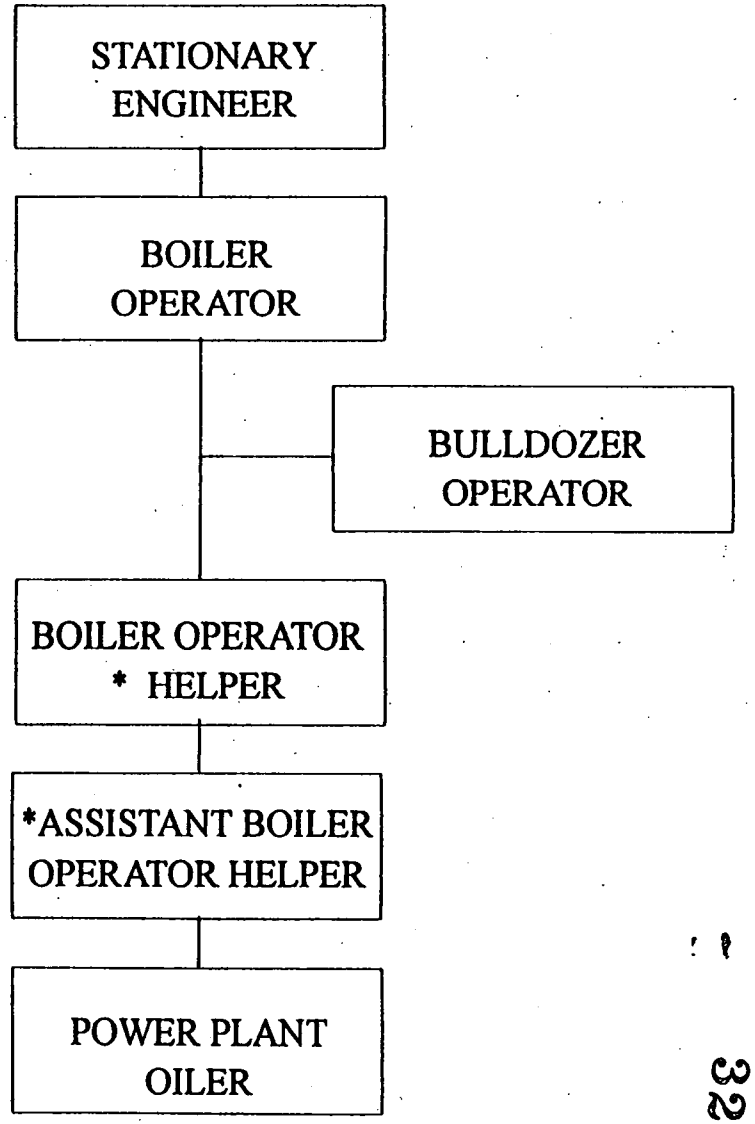
* Classification vacancies in the Mason classification shall be filled initially from the Maintenance Laborer Classification.

** Promotional opportunities from MVO would fill vacancies in this classification first.

Separate overtime lists for each classification.

UTILITIES ENVIRONMENTAL TECHNICIANS GROUP
(UET)





Promotional succession as per 1986 letter.

* License training within 6 months.

Effective this date, employees holding the classification of Boiler Operator Helper and Pump Operator prior to October 1, 1988 shall not be required to meet the licensing requirements in effect on this date.

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No. 1

MEMORANDUM OF AGREEMENT

Exchange Agreement

March 1, 1994

In exchange for a non-contributory pension plan and all off-site work (including but not limited to shuttle service, off-site warehouse(s), off-site pick up and deliveries and maintenance and custodial services not written into the lease), the FAT&LC for the life of this agreement only agrees not to grieve the subcontracting of non-scope of work activities of K-65 pits One through Six, the burn pit, the two lime slurries, the solid landfill and the fly ash pile (southfield).

/s/ Robert M. Schwab
President, FAT&LC

/s/ Peggy L. Doherty
Supervisor, Industrial Relations

No. 2

MEMORANDUM OF AGREEMENT

Work Scope

March 1, 1994

This Memorandum of Agreement serves as a more complete understanding of the scope of work to be assigned to the FAT&LC represented work force as set forth in Article 2, Section 3 of the collective bargaining agreement between the Company and the FAT&LC ratified March 1, 1994. The assigned work includes:

Operable Unit 1 - Waste Pit Area

- Remedial Waste Treatment and Disposal (Dry)
  - Operate and maintain treatment plants.
  - Transfer waste materials from treatment plant, onsite temporary storage, or as-found original location, to onsite final disposal.
  - Pack or load waste to rail cars or trucks for offsite shipment and disposal.
  - Transfer waste materials from one plant to another.
  - Transfer waste materials from treatment plants to onsite temporary storage.

- Remedial Waste Treatment and Disposal (Wet)
  - Operate and maintain treatment plants.
  - Pack or load waste to rail cars or trucks for offsite shipment and disposal.
  - Transfer waste materials from one plant to another.
  - Transfer waste materials from treatment plants to onsite temporary storage.
  - Transfer waste materials from treatment plant, onsite temporary storage, or as-found original location, to onsite final disposal.

Operable Unit 2 - Other Waste Units

- Remedial Waste Treatment and Disposal (Other)
  - Operate and maintain treatment plants.
  - Pack or load waste to rail cars or trucks for offsite shipment and disposal.
  - Transfer waste materials from one plant to another.
  - Transfer waste materials from treatment plants to onsite temporary storage.
  - Transfer waste materials from treatment plant, onsite temporary storage, or as-found original location, to onsite final disposal.

- Incidental support services in conjunction with the above

Operable Unit 3 - Production Area

- Safe Shutdown
  - Isolate all utilities.

- Removal of residual production material or LSA waste.
- Remove bulk (stored equipment, spare parts, etc).
- Clean & wipe surface area of equipment & machinery.
- Remove salvageable equipment.

- Characterization/media Sampling (excluding work currently being done by FERMCO salaried technicians)

- Gross Decon
  - Removal of biological waste.
  - Vacuum, wipe, scrape surface
  - Removal of chemical spills.
  - General sweepdown/wipedown of area.

- Gross Washdown
  - Install water containment system (seal floor joints, floor & sump pump).
  - Install scaffold system in addition to abatement scaffolding.
  - Gross washdown executed.
  - Collection of wash water & sampling.

- Routine maintenance asbestos abatement program.

- Packaging & shipping waste in accordance with DOT and NTS regulations.

<u>Operable Unit 4 - Silos 1 thru 4</u>

- Bridge Structure Over Silos 1, 2, & 3.
  - Operate permanent facility.
  - Maintenance and service of facility.
  - Disposition of low specific activity waste.
  - Remove earthen berm.

- Vitrification Pilot Plant
  - Operate permanent facility.
  - Maintenance and service of facility.
  - Disposition of low specific activity waste.

- Dismantlement/Demolition of Silos
  - Disposition of low specific activity waste.

<u>Operable Unit 5 - Environmental Media</u>

- Soil Washing Facility
  - Operate permanent facility.
  - Maintenance and service of facility.
  - Disposition of low specific activity waste.

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- Advance Waste Water Treatment
  - Operate permanent facility.
  - Maintenance and service of facility.
  - Disposition of low specific activity waste.

- South Plume Interim Treatment Facility
  - Operate permanent facility.
  - Maintenance and service of facility.
  - Disposition of low specific activity waste.

- Repair Rubber Liner in Stormwater Retention Basin
  - Remove sludge & waste.
  - Scooping sludge & feed to Plant 8.
  - Disposition of low specific activity waste.
  - Repair or replace lining.

- All Maintenance Activities, Production Activities, and Service Activities

- Free release decontamination at central processing center.

- Size reduction of material and equipment customarily done by FAT&LC.

As future environmental remediation and restoration work is identified and is not contractually committed to under this collective bargaining agreement, the Company and the FAT&LC will discuss the assignment of this work through the Joint Labor Management committee then only if necessary through a neutral facilitation process.

/s/ Robert M. Schwab
President, FAT&LC

/s/ Peggy L. Doherty
Supervisor, Industrial Relations

No. 3

MEMORANDUM OF AGREEMENT

Future Work Scope

March 1, 1994

As future environmental remediation and restoration work is identified and is not contractually committed to under this collective bargaining agreement, the Company shall notify FAT&LC in writing 60 days prior to the commencement of the work. In making its final decision on allocating the work, the Company's consideration shall include, but is not limited to, the following criteria:

1. Whether the type of work in question fits within the scope of work of FAT&LC represented employees under the contract;

2. Whether the work in question has customarily and historically been performed by FAT&LC represented employees, or whether the work has customarily and historically has been performed by other workers;

3. Whether performing the work with other workers is demonstrably more or less cost effective and less efficient than using the FAT&LC workforce;

4. Whether health and safety would be enhanced or endangered by using the FAT&LC represented employees when compared with other represented workers; and

5. Whether allocation of the work to FAT&LC would comply with DOE regulations and requirements.

/s/ Robert M. Schwab
President, FAT&LC

/s/ Peggy L. Doherty
Supervisor, Industrial Relations

No. 4

MEMORANDUM OF AGREEMENT

International Chemical Workers Union
Center for Worker Health and Safety Education

March 1, 1994

The Company shall recognize the ICWU Center for Worker Health and Safety Education as the first choice entity for training of FAT&LC members in all aspects of health and safety education and training in accordance with NEIHS and DOE grants.

The Company and FAT&LC shall jointly develop a training and education program that provides the maximum training in a cost effective manner utilizing the ICWU Center site facilities as may be required.

Further, the Company and FAT&LC shall meet to discuss the providing by the Company of adequate space in close proximity to the plant site for health and safety education and training to cost effectively utilize the time of its manpower.

Employees shall be paid their regular straight-time rate while being trained. Transportation expenses shall be paid when the ICWU Center site is used.

/s/ Robert M. Schwab
President, FAT&LC

/s/ Peggy L. Doherty,
Supervisor, Industrial Relations

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No. 5

MEMORANDUM OF AGREEMENT

Subcontracting

March 1, 1994

The Company and FAT&LC understand that this Memorandum of Agreement is limited solely to the FAT&LC scope of work. The Company is fully cognizant of the potential impact of subcontracting non-construction type work customarily performed by bargaining unit employees within the FAT&LC scope of work and agrees that such decisions should be made only after consideration of various factors involved. It is because of this potential impact that the parties have designed the procedures described in this Memorandum to attempt to preserve jobs of the FAT&LC workforce when subcontracting work within its scope.

First, many factors are considered prior to subcontracting a particular job or project. Some of the factors include but are not limited to the following:

* availability of special skills
* availability of equipment and supplies
* expediency mandating immediate action when FAT&LC represented employees are being fully utilized in other priorities
* Department of Energy regulations and requirements, including I.35, Page 102 of the Company's contract with the DOE
* Legal, safety and cost-effectiveness

In each case, prior to subcontracting, a thorough review is to be given by the Subcontract Review Committee to each job or project. A final recommendation is to be made consistent with the Company's business needs and job security of the FAT&LC workforce. It is agreed that one FAT&LC represented employee will be on the Subcontract Review Committee as a member and that such employee will be designated by the FAT&LC President. The SRC shall prepare a report ascertaining whether the proposal to subcontract-out meets the criteria outlined above. In those cases where the SRC has determined that efficiency factors set forth above counsel against subcontracting work customarily performed by FAT&LC, the Company shall seek prior approval of the DOE contracting officer for the Company to self-perform the work.

The Company agrees to notify and discuss with the Union on a regular basis any work recommended to be subcontracted within the FAT&LC work as identified in Article II of the collective bargaining agreement. Normally such notification will be in written form and will include such information as (a) description of work; (b) classifications involved; (c) approximate date work is needed; and (d) reasons.

The Union will be provided the opportunity to discuss the job or project prior to the work being subcontracted and normally prior to a request for proposal being issued.

Second, when such work is subcontracted it is recognized that the Company will, unless unforseen circumstances prevent it, continue to employ FAT&LC represented employees under the collective bargaining agreement for work set forth in Article II of the collective bargaining agreement working in conjunction with the subcontractor and its employees to accomplish the required work. Potential subcontractors will be advised in the request for proposal that the Company will supply FAT&LC represented employees for Article II "scope of work" performed under the subcontract.

Where FAT&LC represented employees have been assigned to work under a subcontract, the Company shall identify its responsible supervisor.

The Company is committed to making every effort to effectively manage the process described above.

This Memorandum of Agreement is reached in order to improve communications between the parties and is in the interest of good overall employee relations and job security of the workforce.

/s/ Robert M. Schwab
President, FAT&LC

/s/ Peggy L. Doherty
Supervisor, Industrial Relations

000461

No. 6

MEMORANDUM OF AGREEMENT

Seniority

March 1, 1994

The parties have agreed to certain concepts which will allow the Company to make the most efficient use of bargaining unit members in accomplishing its mission of environmental management and remediation and to promote job stability and the best use of employees talents and experience.

These new concepts may require that the parties re-open negotiations to ensure that the seniority system now in place equitably serves the workforce in a manner that is also consistent with DOE policy and Congressional directive.

The Union thus reserves the right on 60 days notice to re-open negotiations solely to amend the seniority plan either on the first anniversary of the ratification of the Collective Bargaining Agreement or within 120 days after the announcement of a layoff.

If the parties fail to agree, the current contract provisions shall continue to apply and the matter will be submitted to interest arbitration using the procedural terms of the Grievance and Arbitration procedures of the Collective Bargaining Agreement.

/s/ Robert M. Schwab
President, FAT&LC

/s/ Peggy L. Doherty
Supervisor, Industrial Relations

No. 7

MEMORANDUM OF AGREEMENT

Backlog Grievances

March 1, 1994

During the negotiations leading to the collective bargaining agreement of March 1, 1994 the parties recognized that there are a large number of grievances pending, many of which were filed even before FERMCO became the contractor at the Fernald site. The parties agree that within 30 days of the effective date of the Agreement, they will meet to begin a series of grievance resolution discussions with the intent to either drop, settle, mediate or proceed to arbitration on each of the grievances.

/s/ Robert M. Schwab
President, FAT&LC

/s/ Peggy L. Doherty
Supervisor, Industrial Relations

000463

No. 8

MEMORANDUM OF AGREEMENT

Health & Safety Bill of Rights

March 1, 1994

Within 60 days after the ratification of this agreement, the Company and the FAT&LC shall meet and make a good faith effort to reduce to writing a "Health and Safety Bill of Rights" which will summarize the central health and safety provisions of the Collective Bargaining Agreement, the Company's Comprehensive Environmental Occupational Safety and Health Plan ("CEOSP"), and applicable laws and regulations.

The purpose of this document shall be to provide an avenue for all members of the bargaining unit and their supervisors to understand the rights of employees to be protected against health and safety hazards.

The parties may invite a representative from the DOE to participate in the drafting of the "Health and Safety Bill of Rights."

When it is completed, the Health and Safety Bill of Rights shall bear the logo of the Company and the FAT&LC and shall be posted in conspicuous places at the worksite and be available for distribution to workers and their supervisors.

In addition, the Company and the FAT&LC shall -- in anticipation of amendments to the Occupational Safety and Health Act making that Act applicable to DOE facilities -- discuss implementation of OSHA and any new amendments or standards.

Nothing in this Memorandum shall detract from the fact that the Company has sole responsibility for maintaining safe working conditions.

/s/ Robert M. Schwab
President, FAT&LC

/s/ Peggy L. Doherty
Supervisor, Industrial Relations

No. 9

MEMORANDUM OF AGREEMENT

Manpower Projections

March 1, 1994

The Company has in good faith told the FAT&LC during negotiations that it expects the number of FAT&LC represented employees to increase during the term of the Agreement. Both parties understand that numerous factors, including regulatory decisions, government funding, and other regulatory factors that influence final decisions on the remedial activities at the FEMP site may alter those projections.

/s/ Robert M. Schwab
President, FAT&LC

/s/ Peggy L. Doherty
Supervisor, Industrial Relations

000465

No. 10

MEMORANDUM OF AGREEMENT

Substance Abuse Program

March 1, 1994

The Company and the FAT&LC agree to continue discussing the provisions of their respective Substance Abuse Programs through the Joint Labor Management Committee. Both parties recognize the requirement to comply with both the Department of Transportation and the Department of Energy regulations governing this program.

/s/ Robert M. Schwab
President, FAT&LC

/s/ Peggy L. Doherty
Supervisor, Industrial Relations

No. 11

MEMORANDUM OF AGREEMENT

Promotion for Transportation Laborers

March 1, 1994

The Company shall promote those employees in the Transportation Laborer classification as of March 1, 1994 to the classification of Motor Vehicle Operator (MVO) within sixty days of this agreement so long as the employees have been available for the required training to qualify for the MVO classification. Should any of these Transportation Laborers not wish to take this promotion or do not successfully complete the training and licensing requirements, such promotion(s) shall be withdrawn until such time as the employee becomes trained and licensed.

The Company shall offer and the employee must successfully complete all necessary training and licensing within this sixty day period. Should the Company fail to provide the training within this time period, the Transportation Laborers who have accepted the promotion will be given the Motor Vehicle Operator rate of pay in accordance with Appendix A.

/s/ Robert M. Schwab
President, FATLC

/s/ Peggy L. Doherty
Supervisor, Industrial Relations

000467

1994
FATLC HOLIDAYS

February
21 President's Day

April
1 Good Friday

May
30 Memorial Day

July
4 Independence Day

September
5 Labor Day

November
11 Veteran's Day
24 Thanksgiving
25 Day after Thanksgiving

December
23 Christmas Eve
26 Christmas Day

January

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1995
FATLC HOLIDAYS

January

2 New Year's Day

February

20 President's Day

April

14 Good Friday

May

29 Memorial Day

July

4 Independence Day

September

4 Labor Day

November

10 Veteran's Day
23 Thanksgiving
24 Day after Thanksgiving

December

22 Christmas Eve
25 Christmas Day

January

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1996
FATLC HOLIDAYS

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January

1 New Year's Day

February

19 President's Day

April

5 Good Friday

May

27 Memorial Day

July

4 Independence Day

September

2 Labor Day

November

11 Veteran's Day
28 Thanksgiving Day
29 Day after Thanksgiving Day

December

24 Christmas Eve
25 Christmas Day

July

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1997
FATLC HOLIDAYS

January

1 New Year's Day

February

17 President's Day

March

28 Good Friday

May

26 Memorial Day

July

4 Independence Day

September

1 Labor Day

November

11 Veteran's Day
27 Thanksgiving Day
28 Day after Thanksgiving Day

December

24 Christmas Eve
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3/2/1994

1998
FATLC HOLIDAYS

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January

1 New Year's Day

February

16 President's Day

April

10 Good Friday

May

25 Memorial Day

July

3 Independence Day

September

7 Labor Day

November

11 Veteran's Day
26 Thanksgiving Day
27 Day after Thanksgiving

December

24 Christmas Eve
25 Christmas Day

July

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Attachment J.4.8

Project Labor Agreement (PLA) between FERMCO and GCBCTC, 3/30/93 and Addendum to the PLA, dated 4/8/96

FERNALD ENVIROMENTAL MANAGEMENT PROJECT

PROJECT LABOR AGREEMENT

between

FERNALD ENVIROMENTAL RESTORATION MANAGEMENT CORPORATION

"FERMCO"

and

GREATER CINCINNATI BUILDING AND CONSTRUCTION TRADES COUNCIL, AFL–CIO

Fernald, Ohio
Hamilton County

March 30, 1993
Rev. 0

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03-30-93

PREAMBLE

This Agreement, hereinafter designated as the "Project Labor Agreement" or "Agreement", is entered into for the work described herein to be performed at the Fernald Environmental Management Project (FEMP) site, at Fernald, Ohio hereinafter referred to as the "Project". Parties to this agreement are the Greater Cincinnati Building and Construction Trades Council (GCBCTC), AFL-CIO, and affiliated UNIONS signatory hereto, hereinafter collectively referred to as "UNIONS" or individually as "UNION", and the Fernald Environmental Restoration Management Corporation (FERMCO) and its subcontractors of whatever tier performing work within the scope of this Agreement, hereinafter referred to collectively as "EMPLOYERS" or individually as "EMPLOYER."

ARTICLE I

PURPOSE

Section 1-1: The parties acknowledge that the unique conditions of the Department of Energy (DOE)-Environmental Restoration Management Contract (ERMC) concept and of this Project will require their full and complete cooperation. The purpose of this Agreement is to ensure that the work on the FEMP site proceeds safely, economically and efficiently without unnecessary interruption, and to establish procedures for the settlement of all misunderstandings, disputes or grievances without any interruption of the work or disruption of labor management peace.

Section 1-2: It is the intent and desire of FERMCO and its subcontractors of whatever tier to have the work covered by this Agreement performed under the conditions described herein to ensure labor harmony. This intent and desire is consistent with FERMCO's commitments to the U.S. Government (USG) which requires the development and implementation of creative and innovative approaches to achieving the ultimate goals of this Project. The parties acknowledge that FERMCO has legal obligations and contractual commitments to maximize the use of small business concerns, small disadvantaged business concerns, women-owned small business concerns and labor surplus area personnel, hereinafter collectively referred to in this Agreement as "SB/SDB". These SB/SDB obligations will be taken into consideration in interpretation and implementation of this Agreement.

Section 1-3: It is agreed that the UNIONS, FERMCO and its subcontractors of whatever tier who are performing work within the scope of this Agreement shall sign, accept and be bound by the terms and conditions of this Project Labor Agreement for this site only. It is further agreed that the terms and conditions of this Agreement shall supersede and override the terms and conditions of any and all other national, area, or local collective bargaining agreements and that neither FERMCO nor its subcontractors will be required to sign any other labor agreements with the signatory UNIONS. FERMCO shall have complete discretion in selecting applicants for and recipients of subcontracts for work to be performed within the scope of this Agreement. All contractors and subcontractors shall be recognized as separate and independent EMPLOYERS with several and not joint liability. UNION liability shall also be several and not joint.

Section 1-4: Local working agreements, local practices, customs, rules, conditions of employment and working conditions not specified in this Project Labor Agreement or Appendix A shall not be recognized.

Section 1-5: Any union not signatory to this Agreement will not receive any benefits or conditions other than those outlined in this Agreement. The UNIONS signatory hereto agree that they will not support, in any manner, any request to use non-signatory unions on the Project site. If directed by the EMPLOYER, the UNIONS will perform the work of the crafts that could have been represented by the non-signatory unions on this Project.

ARTICLE II

SCOPE OF AGREEMENT

Section 2-1: This Agreement shall apply to FERMCO, its subcontractors and their lower tier subcontractors when they are performing work within the scope described in this Article on the FEMP site. The Project site is approximately eleven hundred acres located near Fernald, Ohio predominately in Hamilton County, which was formerly the DOE's Feed Materials Production Center. The scope of the work covered by this Agreement is restricted to work performed on the Project and shall consists of three categories.

CATEGORY ONE consists of work traditionally recognized and accepted as construction work on this site. Work in Category One includes:

a) The construction of permanent facilities or structures;
b) Demolition activities to facilitate construction of new permanent facilities at the location of the demolition activity; and
c) Movement and distribution of construction materials and equipment by the construction contractors and subcontractors inside the Project site; and
d) Subcontracted activities that are segregated from normal site operations and are related to demolition of permanent structures or facilities.

The activities defined herein as CATEGORY ONE do not fall within the definition of any other collective bargaining unit recognized on the Project site and all work defined herein as CATEGORY ONE work shall be performed under the terms and conditions of this Project Labor Agreement.

CATEGORY TWO consists of other work within the traditional skills and capabilities of the Building and Construction Trades UNIONS signatory hereto and commonly performed by contractors employing their members. This other work in CATEGORY TWO includes:

a) Environmental remediation and restoration activities, demolition, dismantling and decommissioning activities;

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b) Decontamination (chemical or radionuclear) of material, equipment, facilities, or structures, incidental to construction, demolition, or dismantling;
c) Size reduction of material and equipment;
d) Construction or fabrication of containers for radioactive or chemical waste;
e) Movement, relocation, packaging, or placement of contaminated or uncontaminated scrap or waste materials incidental to construction, demolition, or dismantling;
f) Repair or modification of structures, facilities, or equipment; and
g) Operation and manning of onsite decontamination facilities.

FERMCO, subject to DOE regulations and review, shall determine whether this other work in CATEGORY TWO shall be done under the terms of this Project Labor Agreement. A representative of the GCBCTC shall participate in any formal review process adopted to make or recommend such decisions. FERMCO's determination shall be final and binding on the parties to this Agreement. In making that determination FERMCO will consider its contractual obligations, including its contract with the USG and its collective bargaining agreements and FERMCO shall use its best efforts to make such determinations in a manner to promote stability of employment among all personnel working at the site, to effect maximum safety, to minimize cost to the USG, to shorten the project schedule where possible, and to maximize the efficiency with which the Project is accomplished.

CATEGORY THREE consists of additional work activities not specifically described in CATEGORY ONE or CATEGORY TWO which FERMCO, the UNIONS, and the affected subcontractor agree can be safely, efficiently, and economically performed by employees working under this Agreement. Assignments of these additional work activities to employees working under this Agreement shall be made only with the consent of FERMCO, the affected subcontractor and the signatory UNIONS.

Section 2-3: This Agreement shall only be binding on the parties signatory hereto and shall not apply to parents, affiliates, subsidiaries, or other ventures of such parties.

Section 2-4: This Agreement does not apply to:

A. Work performed under the NTD, Elevator, National Stack, and/or Cooling Tower Agreement(s);

B. Work performed by non-manual employees, including, but not limited to, superintendents, supervisors, engineers, field engineers, surveyors, quality assurance and quality inspectors, technicians, office workers, messengers, persons making deliveries to and from the project site, warehouse employees, guards, medical personnel, emergency vehicle operators and employees similarly classified;

C. The furnishing, manufacturing or off-site fabrication of materials, supplies or equipment or other off site work;

D. Warranty repair and maintenance work performed by manufacturers representatives or vendors;

E. All Owner operations and activities (i.e. DOE or USG);

F. Work performed by technicians at the discretion of the EMPLOYER and work performed under subcontracts which FERMCO designates as being for technically unique services or skills. Notwithstanding the exclusion as specified in Section 2-4, the UNIONS may challenge through Article IX any unreasonable or unwarranted application of this Paragraph F only;

G. The delivery to or removal from the Project of any material by any means; and

H. Landscape maintenance or work related to moveable office or building furnishings.

Section 2-5: The UNIONS acknowledge that FERMCO will employ a substantial number of people on this project who are not covered by this Agreement, and that some of them are in bargaining units represented by unions that are not parties to this Agreement. The UNIONS also acknowledge that there will continue to be contractors working for FERMCO, the DOE or USG or others on this Project who are not covered by this Agreement. Therefore, it is agreed that employees covered by this Agreement will perform any work as directed by the EMPLOYER without having any concern or interference with any work performed by any employees who are not covered by this Agreement.

ARTICLE III

EMPLOYMENT

Section 3-1: All persons employed by EMPLOYERS for work within the scope of this Agreement as defined in Article II shall receive the wages and benefits as outlined in Appendix A (including subsequent revisions) and shall work under all the other terms and conditions of employment provided for herein.

Section 3-2: The EMPLOYER agrees to utilize the legal referral facilities maintained by the UNIONS which are not inconsistent with this Agreement. The EMPLOYER shall notify the UNIONS either in writing or by telephone as to the classifications and number of workers required.

Section 3-3: The UNIONS agree to furnish qualified workers, including qualified journeymen from outside the local area when qualified local workers are not available. Qualified workers from outside the local area who are employed may be retained during any reduction in force (RIF). When the UNIONS are notified that special training or certification for work with hazardous materials is required they will refer qualified workers who have completed the required training and/or who have the required certification. If the UNION is unable to fill requisitions with qualified workers with the required training and/or

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certification, the EMPLOYER may, at its option, exercise the rights given in Section 3-6 below to hire qualified employees with the required training and/or certification from any source.

All parties recognize the critical importance of training to the success of the Project and will cooperate to the fullest extent in establishing, supporting and seeking government and/or other assistance or grants for all appropriate training programs for ERMC work. FERMCO and the GCBCTC shall coordinate such activities.

Section 3-4: The EMPLOYER shall have the right to hire foremen, general foremen, and key employees. Key employees are defined as craft employees who posses special skills or abilities that are not readily available in the area. In the selection of foremen, general foremen and key employees the EMPLOYER shall give primary consideration to qualified individuals available in the area.

Section 3-5: The UNIONS commit to joining FERMCO and the EMPLOYERS in making all reasonable efforts to maximize the utilization of contractors and subcontractors that are recognized under USG Regulations as SB/SDB concerns. In furtherance of this joint commitment the UNIONS agree, that in addition to having the full benefits of all other provisions of this Agreement any SB/SDB subcontractor may select and directly employ at least one key employee in each craft. Additional key employees may be directly employed under this Section for each five employees in each craft hired through the referral facilities as referenced in this Agreement until a total of five key employees in each craft for each SB/SDB subcontractor are employed. The proportion of key employees shall not be increased by layoff or otherwise.

In addition the UNIONS will participate fully as requested in FERMCO's efforts to encourage SB/SDB subcontractors to bid and participate in this Project and the UNIONS will provide FERMCO with all information available to them on the identity of such contractors and subcontractors. The UNIONS will provide, at their cost, training and education on union employer procedures and practices.

Under-utilization of SB/SDB subcontractors which may adversely impact FERMCO's contractual goals and obligations will be addressed by the Labor-Management Cooperative Committee (LMCC), as established in ARTICLE XVI of this Agreement. Good faith efforts will be jointly developed, implemented and monitored.

Section 3-6: In the event the referral facilities maintained by the UNIONS are unable to fill requisitions within forty eight (48) hours (excluding Saturdays, Sundays and holidays) from the time of the EMPLOYER'S requisition of employees, the EMPLOYER may obtain employees from any source.

Section 3-7: The EMPLOYER may employ Registered Apprentices or other non-journeymen classifications ("Temporary Employees") to do work within the craft jurisdiction at up to thirty-three (33%) percent of each craft's work force for each subcontractor. The UNION shall be given the first opportunity to fill requests for employees in these categories. The rate of pay for the non-journeymen classifications (excluding Registered Apprentices) shall not exceed

50 percent of the journeyman base rate of pay of the appropriate craft, with no pension contribution for the first 4000 hours worked. In the event the UNIONS are unable to fill requests for Registered Apprentices and/or non-journeymen then Section 3-6 shall apply. Registered Apprentices immediately available in the local area must be exhausted prior to the employment of non-journeyman.

Section 3-8: The EMPLOYER'S office at the Project site will be considered as the place of hire, and the time of hire is when the referred applicant for employment is accepted by the EMPLOYER.

Section 3-9: The EMPLOYER shall have the right to determine the competency of all employees and the right to determine the number and classifications of employees required. The EMPLOYER shall also have the right to reject any applicant referred by the UNIONS.

Section 3-10: The UNIONS will not in any way encourage turnover or absenteeism and will not knowingly refer any employees working on the site to another EMPLOYER. There will be a thirty (30) day waiting period prior to employment eligibility on the Project for employees who voluntarily quit (VQ) their employment on the Project and a ninety (90) day waiting period prior to employment eligibility for employees discharged for cause (DFC) or for safety reasons on the Project. FERMCO may bar any person from employment on this Project either permanently or for an indefinite time for just cause.

Section 3-11: During a RIF, EMPLOYERS have the right to retain employees of their choice without regard to any other criteria, except as provided in the case of UNION Stewards by Section 5-7.

Section 3-12: An employee or applicant required to satisfactorily demonstrate his ability to perform certain tasks through a certification, examination or test (welding tests, etc.) shall be paid for that time required to take the exam or test provided the employee or applicant successfully passes the exam or test.

ARTICLE IV

NON-DISCRIMINATION

Section 4-1: It is agreed that equal employment opportunity shall be afforded to all qualified persons without regard to: disabling conditions unrelated to the successful accomplishment of the job for which employed, age, race, creed, color, sex, veteran status or national origin. This shall be applicable to all matters relating to hiring, training, promotion, transfer or termination of employees.

Section 4-2: All descriptive words such as journeyman, craftsman and all other personal nouns or pronouns which may be referenced in this Agreement or Appendix A refers to both the male and female gender.

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Section 4-3: Employees covered by this Agreement shall utilize the Grievance Procedure, Article IX, for the resolution of alleged discrimination complaints, allegations and all employee concerns.

ARTICLE V

UNION REPRESENTATION

Section 5-1: Authorized UNION Business Representatives will be permitted access to the Project to conduct union business in accordance with the established visitation procedures, security and safety rules provided they do not disrupt, interrupt, or interfere with the progress of the work. Union Representatives, Stewards and individual workmen will not interfere with personnel or companies not covered by this Agreement or with the work which is being performed by them.

Section 5-2: Employees shall, as a condition of employment, become and remain UNION members in good standing within eight (8) days of their date of hire or the effective date of this Agreement whichever is later. This union security Section shall conform to the National Labor Relations Act (NLRA) and other applicable laws.

Section 5-3: The Business Representative for each of the local UNIONS signatory hereto shall have the right to designate a working Steward for each EMPLOYER, who shall be recognized as the UNION'S representative on the Project. The Steward shall be a qualified journeyman and shall perform the work of the craft. Under no circumstances shall there be a non-working Steward on the Project.

Section 5-4: The working Steward will be paid at the applicable wage rate for the job classification in which employed.

Section 5-5: The working Steward shall not be entitled to any preferential treatment by the Employer and will be subject to discipline (including discharge for proper cause) to the same extent as other employees. The EMPLOYER will permit the Steward sufficient time to perform the duties inherent to a Steward's responsibilities. The Steward shall not leave the work area without first notifying his Foreman as to the intent, the reason for leaving the work area, where going, the estimated time to be gone and first obtaining permission from the Foreman. Delay of permission for the Steward to leave the work area will be permitted in the event of an emergency or if it would cause interruption of work which cannot be immediately interrupted. Should the Steward leave the area without permission from the Foreman, disciplinary action up to and including termination is in order.

Section 5-6: If employees are assigned to work outside the Steward's regular working hours, the UNION may designate one such working employee as temporary Steward and the work shall continue without interruption.

Section 5-7: The Steward will not be discharged until notification has been given to the UNION and when workers are laid off, the Steward will be the last

employee laid off provided the Steward is qualified to perform the remaining work.

Section 5-8: Each Steward shall be concerned only with the employees of the Steward's own EMPLOYER and not with the employees of any other Employer.

Section 5-9: A Steward's duties shall not include hiring and termination or any involvement in, or any interference with, decisions reserved to the EMPLOYER. A Steward will not cause any interference with the progress of work.

ARTICLE VI

MANAGEMENT RIGHTS

Section 6-1: The EMPLOYER retains all rights and authority not expressly excluded or limited by this Agreement including, but not limited to, the rights to:

A. Plan, direct and control the execution and assignment of all work.

B. Determine the size of crews and the number of foremen and general foremen needed.

C. Hire and lay off employees as the EMPLOYER feels appropriate to meet work scope requirements and retain necessary skills and trained resources, except as provided in Section 5-7 in the case of UNION Stewards.

D. Each EMPLOYER may transfer employees from job to job on the Project without limitation or restriction, and from shift to shift with reasonable notice.

E. Determine work methods and procedures.

F. Utilize all equipment and machinery as it deems necessary including assigning operators, drivers, mechanics and oilers to any equipment or machinery in the most efficient manner.

G. Discharge, suspend, or discipline employees for proper cause.

H. Shutdown or suspend any or all work on the Project.

Section 6-2: No rules, customs or practices shall be permitted or observed which the EMPLOYER determines will adversely affect the Project. The EMPLOYER may utilize any methods or techniques of construction, demolition, dismantling or reclamation and there shall be no limitation or restriction on the use of precast, prefabricated, preassembled materials, or off-site fabricated items, tools, or other labor saving devices, nor shall there be any limitation upon choice of materials, design or technology.

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Section 6-3: EMPLOYER'S management and supervisors, including foremen and general foremen, may operate company pick-up trucks, automobiles, and similar vehicles.

ARTICLE VII

SUBCONTRACTING

Section 7-1: A subcontractor is any person, firm or corporation who is assigned, takes over or performs any of the work to be performed within the scope of this Agreement. Any subcontractor of whatever tier performing covered work on the Project site shall become signatory to this Project Labor Agreement. All such subcontractor(s) shall indicate their acceptance of the terms and conditions of this Agreement by signing the Letter of Assent (LOA) and by delivering a copy to FERMCO prior to commencement of work on the Project site. FERMCO will provide copies of the executed LOA to the GCBCTC. This Project Labor Agreement shall apply to and be binding upon EMPLOYERS for work performed by them on this Project site only. All subcontractors of whatever tier, will arrange and conduct a pre-job conference with the UNIONS prior to starting work on the Project.

Section 7-2: All subcontractors will be required to pay the total wage and benefit package as specified in Appendix A (including subsequent revisions) of this Agreement through the duration of their work on the Project and will provide certified payrolls to FERMCO which will be available to the UNIONS upon request.

Section 7-3: The furnishing of materials, supplies, or equipment, and the delivery or removal thereof shall not be considered as subcontracting.

ARTICLE VIII

WORK STOPPAGES AND LOCKOUTS

Section 8-1: All parties recognize the importance of the uninterrupted performance of work on the Project, and agree to process all disputes (excluding jurisdictional) with the EMPLOYER only in accordance with the Grievance and Arbitration provisions set forth in Article IX of this Agreement.

Section 8-2: There will be no strikes, picketing, slow-downs, work stoppages or disruptive activity of any kind on or at the Project. There will be no interference with delivery or removal of material to, or from the Project. There will be no lockouts.

Section 8-3: The UNIONS further agree that if any UNION or any other persons, whether parties to the Agreement or not, engage in any work stoppage or picketing, the UNIONS will refuse to honor such work stoppage or picket line.

Section 8-4: Nothing shall be deemed to limit or restrict the EMPLOYER'S or the UNION'S right to pursue any and all remedies available under law in the event of a violation of this Article.

ARTICLE IX

GRIEVANCE PROCEDURE AND ARBITRATION

Section 9-1: All grievances that may arise on any work covered by this Agreement must be filed by the aggrieved party, in writing, within five (5) working days after the occurrence of events giving rise to the grievance. The FERMCO Manager of IR will be copied on all grievances and on each step of the grievance procedure.

Grievances shall be handled in the following manner:

Step 1. Between the aggrieved party, Steward and the EMPLOYER'S job site representative. If there is no settlement within five (5) working days after the grievance is filed, proceed to Step 2, with written notice and attached Grievance Form to the UNION, the EMPLOYER and FERMCO Industrial Relations Manager that the grievance has not been resolved at Step 1.

Step 2. Between the aggrieved party and the UNION Business Representative and the EMPLOYER'S Labor Relations Representative. If there is no settlement within five (5) working days, proceed to Step 3.

Step 3. If the grievance is not resolved at Step 2, the grievance shall be referred in writing on a Grievance Form provided by FERMCO to the Joint Conference Committee (JCC) consisting of three representatives appointed by FERMCO and three representatives appointed by the GCBCTC who shall hear and act upon the matter within ten (10) working days after receipt of the written grievance. Questions of general import as to the meaning and application of this Agreement which cannot be resolved by the UNION and the EMPLOYER involved may be referred directly by any party to the JCC for consideration without resort to Step 1 or Step 2 of the Grievance Procedure. Unanimous decisions of the JCC shall be final and binding on all parties and employees. Matters not resolved by the JCC may be referred to arbitration by any affected party to this Agreement, as set forth below.

Site subcontractors or local UNION Representatives who are appointed members of the JCC shall not participate on issues which involve them as a direct party to the grievance or dispute. Alternates will be appointed by FERMCO and the GCBCTC.

Step 4. If the issue is not resolved at JCC, the grieving party involved shall, within twenty (20) working days, request the American Arbitration Association (AAA) to present a list of five (5) recommended arbitrators from the Construction Industry Panel. A copy of this request shall be provided to the FERMCO Manager of Industrial Relations. Upon receipt of the list, either party may request a new list once. The parties shall alternately strike names

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a party of interest to meetings with UNION representatives and/or EMPLOYERS for resolution of jurisdictional disputes.

Section 10-4: Where a jurisdictional dispute involves any UNION not a party to the procedures established by the Impartial Jurisdictional Disputes Board (IJDB), or is not resolved between the UNIONS, it will be referred for resolution to the International Unions with which the disputing local UNIONS are affiliated. The resolution of the dispute shall be reduced to writing and signed by representatives of the International Unions, the EMPLOYER and attested by FERMCO.

Section 10-5: The EMPLOYER shall not be liable for any backpay or compensation in any form as a result of work assignments or jurisdictional disputes between UNIONS covered by this Agreement.

ARTICLE XI

HOURS OF WORK, OVERTIME, AND SHIFTS

Section 11-1: The UNIONS and the EMPLOYER acknowledge that the unique needs of this Project will require flexibility in scheduling work. The EMPLOYER shall establish the work schedule or schedules consistent with job needs. The EMPLOYER has the exclusive authority to make shift and overtime assignments to employees as deemed necessary to efficiently perform work activities. Refusal by an employee to work an assigned shift or hours of work may be grounds for termination.

Section 11-2: Due to unique and unanticipated conditions which will be encountered at the FEMP, and are exclusive to this site only, the schedule of work shall conform to one of the following six options:

A. The Standard Work Day: The standard work day shall be eight (8) hours and the standard work week shall be forty (40) hours, Monday through Friday. A single shift shall consist of eight (8) hours of continuous employment, (between the hours of 6:00 a.m. and 6:00 p.m.) except for one unpaid lunch period not to exceed one-half hour.

B. Standard Shift Work Option:

The first shift (day shift) shall consist of eight (8) hours work for eight (8) hours pay at the basic straight time hourly wage rate, plus one-half (1/2) hour unpaid lunch period. The first shift shall be worked between the hours of 6:00 a.m. and 6:00 p.m.

The second shift (swing shift) shall consist of seven and one-half (7 1/2) hours work for eight hours pay at the basic straight time hourly wage rate, plus one-half (1/2) hour unpaid lunch period. The second shift shall be worked between the hours of 3:00 p.m. and 2:00 a.m.

from the list, the grieving party striking first, until a single name remains, who shall be the arbitrator designated to hear the dispute. The arbitrator selected by the parties shall then hear the grievance at the earliest mutually convenient time. Each party shall have the right to present to the arbitrator whatever evidence it deems desirable. The arbitrator's decision shall be final and binding on both parties, provided however, that the arbitrator shall not have the authority to alter or amend the provisions of this Agreement in any way. In the event the services of an impartial arbitrator are required, the fees and expenses shall be paid one half (1/2) by the UNION and one half (1/2) by the EMPLOYER. Either party shall have the right to have a transcript made of the proceedings at its own expense.

Section 9-2: Failure to adhere to the time limitations for processing a grievance under this Article shall cause the grievance to be null and void; however, the time limits may be extended by mutual written consent of the UNION and the EMPLOYER.

Section 9-3: Work will continue uninterrupted while the grievance is being resolved.

Section 9-4: In order to encourage the resolution of disputes and grievances at Step 1 or Step 2 of this Grievance Procedure, the parties agree that such settlements shall not be precedent-setting. Resolution of jurisdictional disputes shall be under Article X only, and not this Grievance Procedure.

ARTICLE X

JURISDICTIONAL DISPUTES

Section 10-1: The Plan for Settlement of Jurisdictional Disputes in the Construction Industry (or successor agency) shall govern all parties. The EMPLOYER who has responsibility for the performance and installation shall make a specific assignment of the work in accordance with Agreements or Decisions of Record. In the absence of such Agreements or Decisions of Record, it is the EMPLOYER'S responsibility to make an assignment in accordance with the procedural rules of the National Plan. The EMPLOYER shall attempt, through pre-job and pre-assignment conferences with UNION representatives, to clear up all work assignments. Such conferences shall be held in advance of actual work performance. FERMCO representatives may elect to attend all such conferences.

Section 10-2: All jurisdictional disputes will be resolved without the occurrence of any strikes, slowdowns, lockouts or other work stoppages, and the EMPLOYER'S assignment of work shall be followed until the parties resolve the dispute in accordance with this Article.

Section 10-3: FERMCO Industrial Relations will exercise good faith efforts to coordinate jurisdictional assignments on the Project site for consistency and be

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The third shift (graveyard shift) shall consist of seven (7) hours work for eight (8) hours pay at the basic straight time hourly wage rate, plus one-half (1/2) hour unpaid lunch period. The third shift shall be worked between the hours of 10:00 p.m. and 9:00 a.m.

C. Four (4) Day-Ten (10) Hour Shift Option: The first shift shall be four ten hour days, Monday through Thursday with a thirty minute unpaid lunch break.

The second shift, if one is scheduled, shall be nine and one-half (9 1/2) hours of work for ten (10) hours pay at the basic straight time hourly wage rate, plus one-half (1/2) hour unpaid lunch period.

D. Five (5) Day-Ten (10) Hour Shift Option: Five ten hour days, Monday through Friday with first and second shifts consistent with Option C above.

E. Alternating Four (4) Day-Ten (10) Hour Shift Option:

Under this option, the day shift manual work force is organized into two (2) teams. The "A" team works for (4) consecutive ten (10) hour days. On the fifth day the "B" team continues the work activities for four (4) consecutive ten (10) hour days. On the ninth day the "A" team returns to work to continue the construction activities. The four (4) day alternating "A" and "B" team operation can continue on a year-round basis. The same pattern applies for second shift. If two shifts are established, they shall be consecutive.

1. In this arrangement the standard work day for all employees will be ten (10) consecutive hours of work, exclusive of one-half (1/2) hour non-paid lunch period.

   On "A" and "B" team operation for first and/or second shift, the first eight (8) hours worked shall be paid at the basic straight time hourly rate. After eight (8) hours of work the rate shall be one and one-half (1 1/2) times the basic straight time hourly wage rate.

2. Those General Foremen and selected Foremen who are directed to report to work the day before the first day of the four (4) day work cycle to complete preparations for their team's scheduled work activities shall work eight (8) hours on that day and be paid one and one-half (1 1/2) times the basic straight time hourly wage rate.

3. If, for any reason, journeymen are directed to report to work outside their regular four (4) day work cycle, they shall be paid at the rate of one and one-half (1 1/2) times the basic straight time hourly wage rate.

4. Changing from one alternating shift to another will not be permitted without a minimum of two (2) consecutive non-working days prior to transferring to the other alternating shift.

5. Prior to implementing the Alternating Four Tens Shift Option, an orientation meeting will be scheduled and held with the affected Local UNION Business Representatives. Further details regarding the administrative practices and day to day operations will be reviewed and discussed and this option is only for work operations of thirty (30) days or longer.

F. Seven Day Shift Option: A seven day per week schedule consisting of a weekday crew working four ten hour days (4X10s), Monday through Thursday with a thirty minute unpaid lunch break to be scheduled by the EMPLOYER and a weekend crew working three ten hour days (3X10's), Friday through Sunday with a thirty minute unpaid lunch break to be scheduled by the EMPLOYER. The weekend crew shall receive straight time for Friday and Saturday and double time for Sunday. Two ten hour shifts per day may be worked on this schedule.

Prior to implementing the Seven Day Shift Option, an orientation meeting will be scheduled and held with the affected Local UNION Business Representatives. Further details regarding the administrative practices and day to day operation will be reviewed and discussed and this option is only for work operations of thirty (30) days or longer.

Section 11-3: Make-Up Day: In the event it is not possible to work a full regularly scheduled workweek because of weather, or other conditions beyond the direct control of the EMPLOYER, then the EMPLOYER shall have the option of scheduling a Friday Make Up Day at straight time pay for up to forty (40) hours including the make up Friday. Work on the make-up day will be scheduled for a full shift unless prevented by weather or other conditions beyond the direct control of the EMPLOYER.

Section 11-4: Provisions Applicable to all Options: Nothing in Article XI shall be construed as guaranteeing employees eight (8) hours of work per day, or ten (10) hours of work per day, or forty (40) hours of work per week. The standard work week shall commence with the start of the first shift (day shift) on Monday morning. Starting times for the work day or work week for service crafts such as drinking water crew, shuttle drivers, equipment mechanics, traffic flagmen, fire watch, etc., may be adjusted between the hours of 4:00 a.m. and 11:00 a.m. Shifts shall be established and continue for a minimum of five (5) consecutive work days and if Saturday and/or Sunday are worked, they shall be included in the five (5) day minimum period. Where not inconsistent with Appendix A Wage Schedules (WS), fringe benefit contributions for employees will be paid on the actual number of hours worked except that fringe benefit contributions will be paid on the basis of eight or ten hours for employees working a full second or third shift and on the basis of forty (40) hours for employees working the full weekend shift under Option F.

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Section 11-5: Overtime shall be paid at the rate of time and one half for all hours worked outside the established shift(s) or in excess of forty hours (40) per week. Work on Sundays and holidays shall be paid at double time, except Sunday shall be time and one half when working the Alternating Four Tens Shift as outlined in Option E. There shall be no pyramiding of overtime and no craft or employee shall receive more than time and one half except for work on Sundays or holidays.

Section 11-6: The EMPLOYER shall designate the starting and quitting times for all employees. The first shift each day shall start between 6:00 a.m. and 9:00 a.m. Any starting time put in place on Monday shall remain in effect for that work week unless a change is mutually agreed upon between the UNION and the EMPLOYER.

Section 11-7: The UNIONS agree to adhere to the time checking procedures established for the Project. All employees will check in and be at their assigned work places defined by their EMPLOYER by starting time each day and will be at the work place at the conclusion of the lunch break or end of the shift. There shall be no practices that result in starting work late in the morning or after lunch, or that result in stopping work early at lunch time or prior to quitting time at the end of the shift. Repeated violations of the work starting and stopping times will be grounds for termination.

Section 11-8: Work in hazardous or contaminated areas where special protective equipment, clothing, decontamination or monitoring is required will be conducted according to applicable safety and health standards. The EMPLOYER will provide sufficient paid time for employees to properly utilize all necessary special protective equipment or clothing and to comply with applicable decontamination or monitoring procedures but these requirements will not result in stopping work or leaving the work area prior to the time determined by the EMPLOYER.

Section 11-9: It will not be a violation of this Agreement for the Owner or the EMPLOYER to shut down all or part of the Project to avoid the possible loss of life because of an emergency situation that could endanger the life and safety of an employee. In such cases, employees will be compensated only for the actual time worked. In the case of a situation described previously, whereby the EMPLOYER requests employees to stand by, the employees will be compensated for the actual "stand by time."

Section 11-10: In no instance will employees be paid for standing by or observing operations unless assigned and directed by the EMPLOYER.

Section 11-11: Any employee reporting for work and for whom no work is provided, except due to inclement weather or other conditions beyond the control of the EMPLOYER, shall receive two (2) hours pay at the regular straight time hourly rate and applicable fringe contributions. Any employee who starts to work and works beyond the two (2) hours will be paid for actual time worked. Whenever minimum reporting pay is provided for employees they will be required to remain at the Project site available for work for such time as they receive pay, unless released sooner by the EMPLOYER'S principal supervisor or his designated

representative. The provisions of this Section are not applicable where the employee voluntarily quits or is laid off or is out by reason of a strike, or as provided in Section 11-9 of this Agreement, in which case he shall be paid for the actual time worked.

ARTICLE XII

HOLIDAYS

Section 12-1: Recognized holidays shall be as follows: New Year's Day, Martin Luther King, Jr. Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Day after Thanksgiving and Christmas Day. No work will be performed on Labor Day. In the event a holiday falls on Sunday, the following day, Monday, shall be observed as such holiday. Monday holidays shall be honored in keeping with Federal Law. Holidays falling on Saturday will be observed on Saturday. There shall be no paid holidays. If employees are required to work on a holiday, they shall receive double the straight-time rate of pay.

ARTICLE XIII

WORKING CONDITIONS

Section 13-1: In the interest of the future of the construction, hazardous waste, and environmental restoration industries in the Fernald, Ohio area of which labor is a vital part, and to maintain the most efficient and competitive posture, the UNIONS and the EMPLOYER pledge to work together to produce the most efficient utilization of labor and equipment on the Project site in accordance with this Project Labor Agreement.

Section 13-2: FERMCO will establish reasonable uniform site working rules/procedures and security, health, and safety rules/procedures in compliance with federal, state, and local regulations and consistent with the unique and special needs of this ERMC site. FERMCO may change these rules during the term of this Agreement with prior notice to the UNIONS. Such notice shall be given two weeks prior to implementation of the change, where practical. All UNIONS, EMPLOYERS, subcontractors and employees agree to abide by these rules and violation of job site rules may result in disciplinary action up to and including suspension or discharge.

Section 13-3: Foremen or general foremen shall be held responsible to direct all work performed by employees under their supervision. Foremen and general foremen will not absent themselves from the area where their crews are working unless their presence is required elsewhere. Foremen and general foremen shall take instructions from individuals designated by the EMPLOYER. The primary duty of the Foreman is to supervise the assigned crew but the Foreman's duties may not necessarily be limited exclusively to supervision. Foremen and general foremen

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shall also take an active interest in safety, cost, schedule, quality and production.

Section 13-4: The receipt and inspection of materials and the methods, procedures and control for warehousing and storage of equipment, materials and tools shall be the strict prerogative of the EMPLOYER.

Section 13-5: There shall be no limit on production by workers nor restrictions on the full use of tools or equipment. There shall be no restriction other than may be required by safety regulations on the number of employees assigned to any crew or to any service.

Section 13-6: There shall be no organized breaks on the Project. All parties and employees shall observe the site smoking policy.

Section 13-7: General tools, such as welding equipment, chain falls, cutting and burning, etc., are tools of the trade having jurisdiction over the work being performed. Employees using these tools shall perform any of the work of their trade.

Section 13-8: Time clocks, brass or other payroll and accountability systems may be used at the option of the EMPLOYER to check employees in or out of the Project on a daily basis on their own time.

Section 13-9: The parties acknowledge that non traditional work assignments may be necessary in some situations to increase the employment opportunities of personnel with construction related skills on this environmental restoration and management project. Likewise, the parties recognize the benefits to the employees and the training and administrative cost savings to the EMPLOYER of maintaining continuity of employment on this type of work. Therefore, where necessary to maintain continuity of employment, the EMPLOYER may decide upon a cadre crew or crews to perform the CATEGORY TWO work, but the use of cadre crews will be limited to the situations described in this Section. The purpose of the cadre crew will be to allow work to be performed efficiently and economically and to stabilize the trained manpower and continue employment opportunities. To this end, members of the crew will perform the work of their craft, and also other work as necessary to be productively employed at all times.

The provisions of this Section 13-9 are restricted to the FERMCO designated "Craft Support" subcontractor only and their jurisdictional and cadre work crew assignments will be reviewed and coordinated by FERMCO IR and will not be used to establish precedent for other site work.

Section 13-10: Employees assigned work which requires the wearing of a respirator shall be required to submit to and successfully pass all required respirator fit tests. Employees required to wear respirators will not be allowed to have facial hair. Employees so assigned who refuse to comply with the no facial hair requirement shall be terminated. Employees who fail the respirator physical may be laid off at the sole discretion of the EMPLOYER.

Section 13-11: Any employee who reports for work under the influence of alcoholic beverages or illicit drugs, or who drinks alcoholic beverages or uses illicit drugs on the work site or who reports to the work site with alcoholic beverages or non-prescribed drugs or firearms in his possession, shall be subject to immediate termination.

Section 13-12: There shall be no job tenure. Continuing employment is contingent upon, but not limited to, the skill, competency, productivity, qualifications, attendance, and safety performance of the employee. The EMPLOYER will be the sole judge of skill, competency, productivity, qualifications, etc.

Section 13-13: Upon initial employment a list of any employee's personal tools will be furnished to the EMPLOYER. Such lists will be verified by the EMPLOYER'S representative by inventorying said tools. This list shall be updated upon the employee adding to or subtracting from his personal tools on the job and be verified by EMPLOYER'S representative. Upon termination from the job, the tool list shall be verified by the employee and EMPLOYER'S representative. Personal tools designated as contaminated in accordance with site procedures will be replaced by the EMPLOYER.

Section 13-14: Tool boxes, lunch boxes, vehicles, and other personal property may be subject to periodic unannounced inspection while on the site. Except in a security emergency or other actions by the site security force, employees shall be notified and given the opportunity to be present.

Section 13-15: When the EMPLOYER provides work clothing it shall be relieved of any responsibility to replace personal clothing which may become contaminated.

ARTICLE XIV

SAFETY AND HEALTH

Section 14-1: Each UNION and each EMPLOYER working under this Agreement acknowledge and agree that the completion of this Project while preserving the safety and health of the employees is their primary objective. To achieve that objective the EMPLOYER, the UNION, all employees, supervisors, managers and subcontractors will make a firm commitment to prevent accidents and eliminate the conditions that lead to injuries. As part of its commitment FERMCO shall develop, administer and enforce a Comprehensive Environmental and Occupational Safety and Health Program (CEOSHP) in compliance with federal, state and local regulations and consistent with the unique and special needs of this ERMC site. FERMCO shall discuss and review this program and any material revisions thereto with the UNIONS.

Section 14-2: The employees covered by the terms of this Agreement shall at all times strictly observe and be bound by the safety, hygiene, sanitation, smoking and environmental rules and regulations as established under the CEOSHP. These rules and regulations are to be communicated to employees through training, written policies, safety handbooks and/or by posting at conspicuous places throughout the Project.

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Section 14-3: The parties recognize that the safety of all employees may be affected by the hazards that drugs and alcohol dependency create at the work site. In an effort to enhance the safety of the work place the EMPLOYER may implement a program including pre-employment, for cause, post accident/incident and random screening for the use of illicit drugs, alcohol or other prohibited substances. This screening program shall be performed by a recognized physician or laboratory and shall comply with all federal, state and local regulations.

Section 14-4: Development and enforcement of the CEOSHP is the responsibility of the EMPLOYER and nothing in this Project Labor Agreement shall make the UNIONS or any UNION liable to any employee or any other person for safety, health or environmental matters.

Section 14-5: FERMCO shall require all contractors and subcontractors working under this Agreement to comply with all applicable provisions of the CEOSHP and Section 14-3.

Section 14-6: Each EMPLOYER shall provide its employees with required personal protective equipment such as hard hats, non-prescription safety glasses, welding gloves, rubber boots and rain gear.

Section 14-7: Each employee agrees to carry and use required exposure monitoring equipment and to cooperate fully in required health monitoring and screening programs.

Section 14-8: Each EMPLOYER shall provide its employees with a clean, safe area for eating their meals.

Section 14-9: Violation of the rules and regulations established under this Article shall be cause for disciplinary action up to and including discharge.

Section 14-10: Environmental, Safety and Health (ES&H) matters affecting employees may be raised before the LMCC. FERMCO and the GCBCTC will also participate in the DOE Tripartite Council and Committees.

ARTICLE XV

WAGES AND BENEFITS
APPLICATION OF APPENDIX A

Section 15-1: The hourly base wage rates and UNION fringe benefits paid employees shall be the hourly wage rates and UNION benefits as contained in the Appendix A Wage Schedules (WS), attached hereto, and by reference made a part of this Agreement. No other classifications, wage rates, fringes or conditions shall apply to work under this Agreement at the Fernald site. No premium pay (i.e., subsistence pay, travel pay, hazard pay, high pay, mask pay, etc.), other than overtime and shift differential, will be recognized under this Agreement.

Section 15-2: The EMPLOYER adopts and agrees to be bound by the written terms of legally established trust agreements specifying the detailed basis on which

payments are to be paid into, and benefits paid out of, such trust funds. The EMPLOYER authorizes the parties to such trust agreements to appoint trustees and successor trustees to administer the trust funds and hereby ratifies and accepts the trustees so appointed as if made by the EMPLOYER. Nothing contained in this Section is intended to require the EMPLOYER to become a party to nor be bound by a local collective bargaining agreement except for the employee benefit fund contributions as required herein, nor is the EMPLOYER required to become a member of any employee group or association as a condition for making such contribution.

Section 15-3: Existing Appendix A wage/fringe packages may be reallocated to existing fringe benefit funds, with sixty (60) days written notice from the Trustees to FERMCO. In any reallocation, the revised total wage/fringe package shall not exceed the total of the existing wage/fringe package as contained in Appendix A.

Section 15-4: Future hourly wage rates and UNION fringe benefit adjustments for the Fernald site will be made once a year, effective the first full pay period in October of each succeeding year, for all crafts and covering all contracts and all signatory parties. The adjustments will be determined by FERMCO and a committee comprised of one (1) representative from each of the signatory UNIONS using the average wage and fringe benefit monetary adjustment as arrived at by independent survey of Ohio, Kentucky and Indiana by the Construction Labor Research Council (CLRC) or successor agency, agreed to by labor and management. The results of the Tri-States Wage/Fringe Survey (W/FS) procedure shall be detailed in the revised Appendix A Wage Schedules (WS), which shall apply to all signatory EMPLOYERS and UNIONS.

Section 15-5: Industry promotion or administrative funds or other funds which do not accrue to the direct benefit of site employees are not considered fringe benefits for purposes of this agreement, will not be surveyed for future adjustments, and need not be paid by the EMPLOYER.

Section 15-6: The EMPLOYER agrees that it will, when requested by the UNION, deduct from the pay of each employee, who is at the time a member of the UNION, or made application to become a member of the UNION, all deductions such as working dues, Building Trades dues, assessments or any other fees, dues or check offs so designated by the employee from that employee's gross wages. These deductions shall be deducted upon presentation of a proper legal payroll deduction authorization signed by said employee requesting such deduction, and remitted monthly as directed by the employee and the UNION. This section shall be applied in compliance with the NLRA and other applicable laws and the UNIONS agree that the EMPLOYER will suffer no loss because of any deduction from an employee's pay pursuant to this Section and the UNIONS will accept any liability which may accrue.

Section 15-7: Under the terms of this Agreement, no subsistence, travel pay, mileage, zone pay, or any other travel allowances will be recognized, or paid, to any employee.

ARTICLE XVI

LABOR-MANAGEMENT COOPERATIVE COMMITTEE (LMCC)

Section 16-1: The parties to this Agreement hereby recognize the necessity of communication and cooperation and the elimination of disputes, misunderstandings or unfair practices on the part of any party. To secure this end, it is hereby agreed that a Labor-Management Cooperative Committee (LMCC) shall be established to be composed of FERMCO, representatives of signatory EMPLOYERS at the site, and UNIONS party to this Agreement who shall meet as required, but not less than quarterly. The UNIONS and EMPLOYERS shall at such meetings present facts concerning any alleged violation of any part of this Agreement. They shall also bring up any practice which, in their opinion, might lead to misunderstandings or disputes between the signatory parties.

Section 16-2: The FERMCO Manager of IR and the Secretary of the GCBCTC shall jointly chair the LMCC. FERMCO shall coordinate LMCC activities, develop procedures of operation, publish meeting agenda and issue minutes of each meeting. Standing agenda items for the LMCC meeting shall include, but not be limited to: safety and health (including ES&H program issues), cost and efficiency, Continuous Performance Improvement (CPI) and Total Quality Management (TQM), manpower requirements and training, and policing of the Agreement.

Section 16-3: The LMCC shall not be used for the purpose of arriving at any agreement to supersede, alter, modify, amend, add to or detract from this Agreement.

ARTICLE XVII

GENERAL SAVINGS CLAUSE

Section 17-1: Any provisions in this Agreement which are in contravention of any federal, state, local or county regulation or laws affecting all or part of the limits covered by this Agreement shall be suspended in operation within the limits to which such law or regulation is applicable for the period during which such law or regulation is in effect. Such suspension shall not affect the operation of any such provisions covered by this Agreement to which the law or regulation is not applicable, nor shall it affect the operations of the remainder of the provisions of the Agreement within the limits to which such law or regulations is applicable. The EMPLOYER and the UNIONS agree that if and when any provisions of this Agreement is held or determined to be illegal or void, they will then promptly enter into lawful negotiations concerning those provisions.

ARTICLE XVIII

ENTIRE UNDERSTANDING

Section 18-1: The parties agree that the total results of their bargaining and the entire understanding between the parties is embodied in this Agreement. This Agreement shall not be amended or supplemented except by mutual consent of the parties hereto reduced to writing and duly signed by each.

ARTICLE XIX

DURATION

Section 19-1: This Project Labor Agreement shall be effective for all work within the scope of this Agreement performed under contracts awarded as the result of a Request for Quotation (RFQ) issued after March 30, 1993. Contractors and subcontractors working under prior contract awards may, at their sole option, become parties to this Agreement and apply its terms and conditions to all remaining site work.

Section 19-2: This Agreement shall continue in full force and effect for the duration of FERMCO's contract with the U.S. Government at the Fernald, Ohio site and any extensions thereof.

Section 19-3: This Agreement and Appendix A are subject to review every three years on the anniversary date of the Agreement. Specific Articles or Sections may be reopened by joint written agreement of FERMCO and the GCBCTC.

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SIGNATURE PAGE

FOR THE EMPLOYERS

Nick Kaufman, FERMCO President

R. G. Weatherred, FERMCO Senior Manager of Industrial Relations

FOR THE UNIONS

R. A. Georgine, President
Building and Construction Trades Department, AFL-CIO

J. F. Maloney, Secretary-Treasurer
Building and Construction Trades Department, AFL-CIO

Lester Willmoth, President
Greater Cincinnati Building and Construction Trades Council

Jerry Monahan, Executive Secretary
Greater Cincinnati Building and Construction Trades Council

Asbestos Workers Local 8

Millwrights Local 1066

Boilermakers Local 105

Operating Engineers Local 18

Bricklayers Local 18

Painters District Council 12

Carpenters District Council

Pipefitters Local 392

Cement Masons Local 524

Plasterers Local 2

Electricians Local 212

Plumbers Local 59

Glaziers Local 387

Roofers Local 42

Ironworkers Local 372

Sheet Metal Local 24

Ironworkers Local 44

Sprinkler Fitters Local 669

Laborers Local 265

Teamsters Local 100

LETTER OF ASSENT TO THE PROJECT LABOR AGREEMENT (PLA) FOR THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (FEMP)

Fernald, Ohio

Pursuant to Article VII of the Fernald Environmental Management Project (FEMP), Project Labor Agreement, the undersigned party hereby agrees that it will comply with and be bound by all of the terms and conditions of the FEMP Project Labor Agreement, including Appendix A, agrees to all approved amendments or revisions thereto, and the decisions of the Labor-Management Cooperative Committee (LMCC) for all work performed on the defined Project site.

This letter of Assent shall apply ONLY to the above referenced Project site and will remain in effect for the duration of the above referenced Project, after which this understanding will automatically terminate without further notice.

FOR THE UNION:

Name of Union: SPRINKLER FITTERS LOCAL 669

1801 McCormick Drive, Suite 450
Landover, MD 20785

Name and Signature of Authorized Person: (Print) H. V. Simpson

(Title) Business Manager

(Signature) H. V. Simpson

Telephone No.: 301/772-5200

Date: 4/8/93

Job is Local 669's District 12
Gerald Singleton, Business Agent
2302 Emerson Avenue
Louisville, KY 40205
502/458-1450

03-30-93 Rev. 0

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LETTER OF ASSENT TO THE PROJECT LABOR AGREEMENT (PLA) FOR THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (FEMP)

Fernald, Ohio

Pursuant to Article VII of the Fernald Environmental Management Project (FEMP), Project Labor Agreement, the undersigned party hereby agrees that it will comply with and be bound by all of the terms and conditions of the FEMP Project Labor Agreement, including Appendix A, agrees to all approved amendments or revisions thereto, and the decisions of the Labor-Management Cooperative Committee (LMCC) for all work performed on the defined Project site.

This letter of Assent shall apply ONLY to the above referenced Project site and will remain in effect for the duration of the above referenced Project, after which this understanding will automatically terminate without further notice.

FOR THE UNION:

Name of Union: ELECTRICIANS LOCAL 212

1216 McMillan Avenue, Cincinnati, Ohio

Name and Signature of Authorized Person: (Print) FRANK W. BUTLER

(Title) B/MANAGER

(Signature) F. W. Butler

Telephone No.: (513) 559-0200

Date: 4/26/93

LETTER OF ASSENT TO THE PROJECT LABOR AGREEMENT (PLA) FOR THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (FEMP)

Fernald, Ohio

Pursuant to Article VII of the Fernald Environmental Management Project (FEMP), Project Labor Agreement, the undersigned party hereby agrees that it will comply with and be bound by all of the terms and conditions of the FEMP Project Labor Agreement, including Appendix A, agrees to all approved amendments or revisions thereto, and the decisions of the Labor-Management Cooperative Committee (LMCC) for all work performed on the defined Project site.

This Letter of Assent shall apply ONLY to the above referenced Project site and will remain in effect for the duration of the above referenced Project, after which this understanding will automatically terminate without further notice.

FOR THE EMPLOYER: (Subcontractor(s) of whatever tier)

Name of Employer: _____

_____

Name and Signature of
Authorized Person: (Print) _____

(Title) _____

(Signature) _____

Telephone No.: ( ) _____

Date: _____

LETTER OF ASSENT TO THE PROJECT LABOR AGREEMENT (PLA) FOR THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (FEMP)

Fernald, Ohio

Pursuant to Article VII of the Fernald Environmental Management Project (FEMP), Project Labor Agreement, the undersigned party hereby agrees that it will comply with and be bound by all of the terms and conditions of the FEMP Project Labor Agreement, including Appendix A, agrees to all approved amendments or revisions thereto, and the decisions of the Labor-Management Cooperative Committee (LMCC) for all work performed on the defined Project site.

This Letter of Assent shall apply **ONLY** to the above referenced Project site and will remain in effect for the duration of the above referenced Project, after which this understanding will automatically terminate without further notice.

FOR THE UNION:

Name of Union: _____

_____

Name and Signature of Authorized Person: (Print) _____

(Title) _____

(Signature) _____

Telephone No.: ( ) _____

Date: _____

FERMCO
PROJECT LABOR AGREEMENT ACRONYMS and CRAFT ABBREVIATIONS

AAA	AMERICAN ARBITRATION ASSOCIATION
AXA	APPENDIX A of the PROJECT LABOR AGREEMENT
BAT	BUREAU of APPRENTICESHIP and TRAINING, DEPARTMENT OF LABOR, USG
BTD	BUILDING and CONSTRUCTION TRADES DEPARTMENT, AFL-CIO
CEOSHP	COMPREHENSIVE ENVIRONMENTAL OCCUPATIONAL SAFETY and HEALTH PROGRAM
CLRC	CONSTRUCTION LABOR RESEARCH COUNCIL
CIR	COUNCIL on INDUSTRIAL RELATIONS
CPI	CONTINUOUS PERFORMANCE IMPROVEMENT
DBA	DAVIS-BACON ACT and RELATED STATUTES
DFC	DISCHARGE FOR CAUSE
DOE	DEPARTMENT OF ENERGY, UNITED STATE GOVERNMENT
DOL	DEPARTMENT OF LABOR, UNITED STATES GOVERNMENT
EC	EXECUTIVE COMMITTEE OF LMCC
ERMC	ENVIRONMENTAL RESTORATION MANAGEMENT CONTRACT (or) CONTRACTOR
ES&H	ENVIRONMENTAL, SAFETY and HEALTH
FEMP	FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERMCO	FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
FFD	FITNESS FOR DUTY (combined with Substance Abuse Program)
GCBCTC	GREATER CINCINNATI BUILDING and CONSTRUCTION TRADES COUNCIL
GF	GENERAL FOREMAN

03-30-93
REV. 0

FERMCO
PROJECT LABOR AGREEMENT ACRONYMS
and CRAFT ABBREVIATIONS

H&W	HEALTH and WELFARE FUND(S)
IJDB	IMPARTIAL JURISDICTIONAL DISPUTE BOARD
IR	INDUSTRIAL RELATIONS
JAC	JOINT APPRENTICESHIP and/or TRAINING COMMITTEE
JCC	JOINT CONFERENCE COMMITTEE (i.e. the Grievance Committee)
LMCC	LABOR-MANAGEMENT COOPERATIVE COMMITTEE
LOA	LETTER OF ASSENT
LTS	LOWER TIER SUBCONTRACTOR (i.e. Sub Subcontractors)
MOA	MEMORANDUM OF AGREEMENT
NJ	NON JOURNEYMAN
NLRA	NATIONAL LABOR RELATIONS ACT
OJT	ON the JOB TRAINING
PLA	PROJECT LABOR AGREEMENT
RFQ	REQUEST FOR QUOTATION
RIF	REDUCTION IN FORCE
SAP	SUBSTANCE ABUSE PROGRAM (i.e. Drug and Alcohol Testing)
SB/SDB	SMALL BUSINESS/SMALL DISADVANTAGED BUSINESS CONCERNS
SCA	SERVICE CONTRACT ACT and RELATED STATUTES
SRC	SUBCONTRACT REVIEW COMMITTEE
SSC	STANDING SUB COMMITTEES (i.e. of the LMCC)

FERMCO
PROJECT LABOR AGREEMENT ACRONYMS and CRAFT ABBREVIATIONS

SUB	SUPPLEMENTAL UNEMPLOYMENT BENEFITS
TQM	TOTAL QUALITY MANAGEMENT
TSHP	TEMPORARY SUMMER HELP PROGRAM
VQ	VOLUNTARY QUIT
W/FP	WAGE/FRINGE PACKAGE of PLA APPENDIX A
W/FS	WAGE/FRINGE SURVEY(S)
WS	WAGE SCHEDULE(S)
USG	UNITED STATES GOVERNMENT

FERMCO
PROJECT LABOR AGREEMENT ACRONYMS
and CRAFT ABBREVIATIONS

CRAFT ABBREVIATIONS

AW	ASBESTOS WORKERS	MW	MILLWRIGHTS
BM	BOILERMAKERS	OE	OPERATING ENGINEERS
BL	BRICKLAYERS	PA	PAINTERS
CP	CARPENTERS	PD	PILE DRIVERS
CM	CEMENT MASONS	PF	PIPEFITTERS
EL	ELECTRICIANS (in)	PL	PLUMBERS
EO	ELECTRICIANS (out)	PR	PLASTERERS
FL	FLOOR LAYERS	RF	ROOFERS
GL	GLAZIERS	SM	SHEETMETAL WORKERS
IR	IRONWORKERS (Rebar)	SF	SPRINKLER FITTERS
IS	IRONWORKERS (Structural)	TF	TILE FINISHERS
LA	LATHERS	TL	TILE LAYERS
LB	LABORERS	TM	TEAMSTERS

03-30-93
REV. 0

PLA GRIEVANCE FORM

PLA Grievance No. _____ Date _____

Category/Index Code _____ Union _____

Employer _____

Employer Tracking No. _____ Union Tracking No. _____

Grievant _____ SS No. _____

Date Grievance Occurred _____

Nature of Grievance, be specific (attach additional pages as required)

_____

_____

_____

State PLA Article(s) and/or PLA Section(s) allegedly violated

Article(s)	Section(s)

Settlement Desired _____

_____

_____

Date _____ Signature of Grievant _____

Date _____ Signature of Union Rep. _____

PLA GRIEVANCE FORM

PLA No. _____ Date _____

Grievant _____ Union _____

STEP 1

Resolution _____

_____

_____

Date _____ Grievant _____

Date _____ Supervisor _____

STEP 2

Disposition of Grievance _____

_____

_____

Date _____ Employer Rep. _____

Date _____ Union Rep. _____

STEP 3

Disposition of Grievance _____

_____

_____

Date _____ Ind. Rel. Mgr. _____

Date _____ BM or Int. Rep. _____

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APPENDIX A

FERMCO-FERNALD, OH
PROJECT LABOR AGREEMENT

Wage Schedule No. PLA 1.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 1.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: **ASBESTOS WORKERS (AW)**

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$20.00
Foreman (plus $1.00)	$21.00
General Foreman (plus $1.50)	$21.50
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$2.92 per hour paid, contribution. (1)
Pension(s):	$4.10 per hour paid, contribution. (1)
App. and Training(s):	$0.13 per hour worked, contribution.
Vacation(s):	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

(1) Does not increase on overtime.

Wage Schedule No. PLA 1.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 1.2 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

	Base Wage Rate	H&W	Pension	App.
1st Year	$8.10	$2.40	$0.30	$0.13
2nd. Year	$8.60	$2.40	$0.30	$0.13
3rd. Year	$11.10	$2.40	$1.55	$0.13
4th. Year	$12.60	$2.40	$1.55	$0.13
5th. Year	$14.10	$2.40	$1.55	$0.13

SPECIAL CONDITIONS

Hazardous Material Handler/Helper (HMH) at $11.05 wage rate with $2.40 H&W and no Pension or Apprenticeship contributions.

APPENDIX A

FERMCO-FERNALD, OH
PROJECT LABOR AGREEMENT

Wage Schedule No. PLA 2.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 2.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: **BOILERMAKERS (BM)**

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$22.52
Foreman (plus $1.00)	$23.52
General Foreman (plus $1.50)	$24.02
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$3.25 per hour worked, contribution.
Pension(s):	$3.50 per hour paid, contribution.
App. and Training(s):	$0.31 per hour worked, contribution.
Vacation(s):	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

Wage Schedule No. PLA 2.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 2.2 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

		Base Wage Rate	H&W	Pension	App.
1A	(70%)	$15.76 (1)	$3.25	$3.50	$0.31
1B	(75%)	$16.89	$3.25	$3.50	$0.31
2A	(80%)	$18.02	$3.25	$3.50	$0.31
2B	(85%)	$19.14	$3.25	$3.50	$0.31
3A	(87.5%)	$19.71	$3.25	$3.50	$0.31
3B	(90%)	$20.27	$3.25	$3.50	$0.31
4A	(92.5%)	$20.83	$3.25	$3.50	$0.31
4B	(95%)	$21.39	$3.25	$3.50	$0.31

(1) Calculated as percent of Journeyman Base Wage Rate.

SPECIAL CONDITIONS

Hazardous Material Helper (HMH) classification is recognized for Fernald site.

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Wage Schedule No. PLA 3.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 3.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: **BRICKLAYERS (BL)**

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$19.21
Bricklayers (BL)	$19.21
Tile Finisher (TF)	$16.48
Tile Layers (TL)	$20.32
Foreman (plus $1.00)	$20.21
General Foreman (plus $1.50)	$20.71
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:		$2.59 per hour worked for Bricklayers, contribution. $2.34 per hour worked for Tile Finishers and Tile Layers, contribution.
Pension(s):	I.U.	$1.50 per hour paid, contribution. (1)
	Local	$0.50 per hour paid for Bricklayers only, contribution. (1)
App. and Training(s):		$0.13 per hour worked for Bricklayers, contribution. $0.02 per hour worked for Tile Finishers and Tile Layers, contribution.
Vacation(s)		Deduction from pay with signed authorization from employee.
Dues:		Deduction from pay with signed authorization from employee.

(1) Does not increase on overtime.

Wage Schedule No. PLA 3.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 3.2 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

BRICKLAYERS

	Base Wage Rate	H&W	Pension	App.
1st 6 Months	50% (1)	$2.59	$2.00	$0.13
2nd 6 Months	55%	$2.59	$2.00	$0.13
3rd 6 Months	60%	$2.59	$2.00	$0.13
4th 6 Months	65%	$2.59	$2.00	$0.13
5th 6 Months	70%	$2.59	$2.00	$0.13
6th 6 Months	75%	$2.59	$2.00	$0.13
7th 6 Months	80%	$2.59	$2.00	$0.13
8th 6 Months	90%	$2.59	$2.00	$0.13

TILE LAYERS

	Base Wage Rate	H&W	Pension	App.
1st 6 Months	50% (1)	$2.34	$1.50	$0.02
2nd 6 Months	55%	$2.34	$1.50	$0.02
3rd 6 Months	60%	$2.34	$1.50	$0.02
4th 6 Months	65%	$2.34	$1.50	$0.02
5th 6 Months	70%	$2.34	$1.50	$0.02
6th 6 Months	75%	$2.34	$1.50	$0.02
7th 6 Months	80%	$2.34	$1.50	$0.02
8th 6 Months	90%	$2.34	$1.50	$0.02

Wage Schedule No. PLA 3.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 3.2 dated 10-01-94.

TILE FINISHERS

	Base Wage Rate	H&W	Pension	App.
1st 6 Months	45% (1)	$2.34	$1.50	$0.02
2nd 6 Months	50%	$2.34	$1.50	$0.02
3rd 6 Months	55%	$2.34	$1.50	$0.02
4th 6 Months	60%	$2.34	$1.50	$0.02
5th 6 Months	65%	$2.34	$1.50	$0.02
6th 6 Months	70%	$2.34	$1.50	$0.02
7th 6 Months	80%	$2.34	$1.50	$0.02
8th 6 Months	90%	$2.34	$1.50	$0.02

(1) Calculated as a percent of Journeyman Base Wage Rate.

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Wage Schedule No. PLA 4.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 4.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: **CARPENTERS (CP)**

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$19.59
Carpenters (CP)	$19.59
Floor Layers (FL)	$19.59
Lathers (LA)	$19.59
Piledrivers (PD)	$19.59
Foreman (plus $1.00)	$20.59
General Foreman (plus $1.50)	$21.09
Non Journeyman	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$2.50 per hour worked, contribution.
Pension(s):	$2.00 per hour worked, contribution.
App. and Training(s):	$0.18 per hour worked, contribution.
Vacation(s):	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

Wage Schedule No. PLA 4.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 4.2 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

	Base Wage Rate	H&W	Pension	App.
1st 6 Months	50% (1)	$2.50	$0.00	$0.18
2nd 6 Months	55%	$2.50	$0.00	$0.18
3rd 6 Months	60%	$2.50	$0.00	$0.18
4th 6 Months	65%	$2.50	$0.00	$0.18
5th 6 Months	70%	$2.50	$2.00	$0.18
6th 6 Months	75%	$2.50	$2.00	$0.18
7th 6 Months	80%	$2.50	$2.00	$0.18
8th 6 Months	90%	$2.50	$2.00	$0.18

(1) Calculated as percent of Journeyman Base Wage Rate.

SPECIAL CONDITIONS

None at this time.

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Wage Schedule No. PLA 5.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 5.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: **CEMENT MASONS (CM)**

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$18.14
Foreman (plus $1.00)	$19.14
General Foreman (plus $1.50)	$19.64
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$2.00 per hour worked, contribution.
Pension(s):	$2.10 per hour worked, contribution.
App. and Training(s):	$0.35 per hour worked, contribution.
Vacation(s)	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

Wage Schedule No. PLA 5.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 5.2 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

	Base Wage Rate	H&W	Pension	App.
1st Year	55%	$2.00	$2.10	$0.35
2nd Year	70%	$2.00	$2.10	$0.35
3rd Year	90%	$2.00	$2.10	$0.35

(1) Calculated as percent of Journeyman Base Wage Rate.

SPECIAL CONDITIONS

None at this time.

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Wage Schedule No. PLA 6.4, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 6.3 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: **ELECTRICIANS (EL)**

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$18.35
Lineman (Out)	$18.35
Wireman (In)	$18.35
Cable Splicer	$18.35
Groundman	$13.76
Foreman (plus $1.00)	$19.35
General Foreman (plus $1.50)	$19.85
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$2.30 per hour worked, contribution.
Pension: (Local)	$1.85 per hour worked, contribution.
(NEBF)	$0.55 represents 3% gross payroll, contribution.
App. and Training(s):	$0.14 represents 3/4 of 1% gross payroll, contribution.
Supl. Unemp.(SUB):	$0.65 per hour worked, contribution.
Sub B:	$1.75 per hours paid, contribution.
Annuity:	$0.75
Dues:	Deduction from pay with signed authorization from employee.

Wage Schedule No. PLA 6.4, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 6.3 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

	Base Wage Rate	H&W	Pension	App.	SUB A	SUB B	NEAP
1st Period 35% (0-1000 Hrs.)	$6.42	$2.30	$0.00	$0.05	$0.00	$1.75	$0.00
2nd Period 40% (1000-2000 Hrs.)	$7.34	$2.30	$0.00	$0.05	$0.00	$1.75	$0.00
3rd Period 45% (2000-3500 Hrs.)	$8.26	$2.30	$0.83	$0.14	$0.65	$1.75	$0.75
4th Period 50% (3500-5000 Hrs.)	$9.18	$2.30	$0.93	$0.14	$0.65	$1.75	$0.75
5th Period 55% (5000-6500 Hrs.)	$10.09	$2.30	$1.02	$0.14	$0.65	$1.75	$0.75
6th Period 70% (6500-8000 Hrs.)	$12.85	$2.30	$1.30	$0.14	$0.65	$1.75	$0.[illegible]

All benefits are paid on per hour worked except SUB B, which is paid on per hour paid.

SPECIAL CONDITIONS

Article IX, Grievance Procedure and Arbitration Step 4:: the following language applies to IBEW/NECA employers only:

Should the grievance not be resolved at Step 3, it shall then, by joint agreement, be referred to the Council on Industrial Relations (CIR) for the Electrical Contracting Industry for adjudication. The Council's decisions shall be final and binding on both parties hereto. The no strike and no lockout language of the PLA shall apply.

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Wage Schedule No. PLA 7.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 7.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: **GLAZIERS (GL)**

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$19.42
Foreman (plus $1.00)	$20.42
General Foreman (plus $1.50)	$20.92
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Not Applicable.

FRINGES

Health and Welfare:	$0.00 per hour worked, contribution.
Pension(s):	$1.90 per hour paid, contribution. (1)
App. and Training(s):	$0.25 per hour paid, contribution. (1)
Vacation(s):	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

(1) Does not increase on overtime.

Wage Schedule No. PLA 7.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 7.2 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

	Base Wage Rate	H&W	Pension	App.
1st 6 Months	40% (1)	$0.00	$0.00	$0.25
2nd 6 Months	45%	$0.00	$0.00	$0.25
3rd 6 Months	45%	$0.00	$0.00	$0.25
4th 6 Months	50%	$0.00	$0.00	$0.25
5th 6 Months	55%	$0.00	$1.90	$0.25
6th 6 Months	60%	$0.00	$1.90	$0.25
7th 6 Months	65%	$0.00	$1.90	$0.25
8th 6 Months	70%	$0.00	$1.90	$0.25

(1) Calculated as percent of Journeyman Wage Rate.

SPECIAL CONDITIONS

None at this time.

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Wage Schedule No. PLA 8.4, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 8.3 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: IRONWORKERS (IR) (Rebar)

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$21.34
Foreman (plus $1.00)	$22.34
General Foreman (plus $1.50)	$22.84
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$2.60 per hour paid, contribution. (1)
Pension(s):	$3.20 per hour paid, contribution. (1)
App. and Training(s):	$0.11 per hour paid, contribution. (1)
Annuity:	$0.43 per hour paid, contribution. (1)
Vacation(s):	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

(1) Does not increase on overtime.

Wage Schedule No. PLA 8.4, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 8.3 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

	Base Wage Rate	H&W	Pension	Annuity	App.
0-2000 Hrs.	60% (1)	$2.60	$3.20	$0.43	$0.11
2000-4000 Hrs.	75%	$2.60	$3.20	$0.43	$0.11
4000-6000 Hrs.	85%	$2.60	$3.20	$0.43	$0.11
6000-Over Hrs.	100%	$2.60	$3.20	$0.43	$0.11

(1) Calculated as percent of Journeyman Base Wage Rate.

SPECIAL CONDITIONS

None at this time.

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Wage Schedule No. PLA 9.7, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 9.6 dated 06-01-95.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: **IRONWORKERS (IS) (Structural)**

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 06-01-96
Journeyman	$19.93
Foreman (plus $1.00)	$20.93
General Foreman (plus $1.50)	$21.43
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$2.60 per hour worked,contribution.
Pension(s):	$3.45 per hour worked, contribution.
App. and Training(s):	$0.15 per hour worked, contribution.
Drug Testing:	$0.01 per hour worked, contribution.
Annuity:	$1.00 per hour paid, contribution.
Vacation(s):	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

Wage Schedule No. PLA 9.7, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 9.6 dated 06-01-95.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

	Base Wage Rate		H&W	Pension	Drug Testing	Annuity	App.
1st Year	(50%)	$ 9.97	$2.60	$3.45	$0.01	$1.00	$0.15
2nd. Year	(60%)	$11.96	$2.60	$3.45	$0.01	$1.00	$0.15
3rd. Year	(70%)	$13.95	$2.60	$3.45	$0.01	$1.00	$0.15
4th. Year	(85%)	$16.94	$2.60	$3.45	$0.01	$1.00	$0.15

SPECIAL CONDITIONS

None at this time.

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Wage Schedule No. PLA 10.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 10.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: **LABORERS (LB)**

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$17.71
Group A	$17.71
Group B	$17.96
Group C	$17.31
Group D	$15.31
Foreman (plus $1.00)	$18.71
General Foreman (plus $1.50)	$19.21

FRINGES

Health and Welfare:	$2.10 per hour worked, contribution.
Pension(s):	$1.60 per hour worked, contribution.
AGC and Training(s):	$0.15 per hour worked, contribution.
Vacation(s):	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

Wage Schedule No. PLA 10.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 10.2 dated 10-01-94.

SPECIAL CONDITIONS

GROUP A: General Laborers; Building Laborers; HAZMAT and Decontamination Laborers,also environmental remediation and restoration activity as assigned solely by the employer.

GROUP B: Power tools; and air tools (excluding regular power hand tools); Mason Tenders or other Tenders.

GROUP C: Demolition, as defined under Service Contract Act (SCA) and/or the Davis-Bacon Act (DBA).

GROUP D: New Laborers with less than 1000 hours experience and may include; fire watch; flag person; traffic control; watchman; housekeeping; landscaping(new work); escorts; janitors(special designated areas); and drinking water crews.

(1) New Laborers with less than 1000 hours of experience do not receive pension for first 1000 hours.

(2) New Laborers who have successfully completed the Laborers-AGC Training Programs shall qualify as Journeyman Laborers after 500 hours OJT.

Additional work functions for Laborer classifications B,C, and D may be added or deleted by joint agreement between Laborers Business Manager and FERMCO Industrial Relations Manager. Joint agreement will be reduced to a written Memorandum of Agreement (MOA).

Laborers working in different classifications or Groups in one full shift, shall receive the higher rate of pay for the full shift.

Group C wage rate not applicable to FERMCO designated "Craft Support Subcontractor".

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Wage Schedule No. PLA 11.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 11.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: **MILLWRIGHTS (MW)**

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$20.40
Foreman (plus $1.00)	$21.40
General Foreman (plus $1.50)	$21.90
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$2.73 per hour worked, contribution.
Pension(s):	$3.00 per hour worked, contribution.
App. and Training(s):	$0.20 per hour worked, contribution.
Vacation(s)	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

Wage Schedule No. PLA 11.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 11.2 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

	Base Wage Rate	H&W	Pension	App.
1st 6 Months	$12.67	$2.73	$0.00	$0.20
2nd 6 Months	$13.53	$2.73	$0.00	$0.20
2nd Year	$16.03	$2.73	$0.00	$0.20
3rd Year	$17.80	$2.73	$0.00	$0.20
4th Year	$18.66	$2.73	$0.00	$0.20

SPECIAL CONDITIONS

None at this time.

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Wage Schedule No. PLA 12.3 dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 12.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: **OPERATING ENGINEERS (OE)**

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$21.37
Group A	$21.37
Group B	$21.25
Group C	$20.21
Group D	$19.78
Group E	$15.92
Master Mechanic (plus $0.25)	$21.62
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$3.61 per hour paid, contribution. (1)
Pension(s):	$2.00 per hour paid, contribution. (1)
App. and Training(s):	$0.30 per hour paid, contribution. (1)
ED & Safety Fund:	$0.04 per hour paid, contribution. (1)
Vacation(s):	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

(1) Does not increase on overtime.

Wage Schedule No. PLA 12.3. Dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 12.2 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

	Base Wage Rate	H & W	Pension	App.	ED & Safety
1st. Year (50%)	$10.69	$3.61	$2.00	$0.30	$0.04
2nd. Year (60%)	$12.82	$3.61	$2.00	$0.30	$0.04
3rd. Year (70%)	$14.96	$3.61	$2.00	$0.30	$0.04
4th. Year (80%)	$17.10	$3.61	$2.00	$0.30	$0.04

TRAINEE (GROUP B BULLDOZER RATE)

	Base Wage Rate	H & W	Pension	App.	ED & Safety
1st. Year (60%)	$12.82	$3.61	$2.00	$0.30	$0.04
2nd. Year (60%)	$12.82	$3.61	$2.00	$0.30	$0.04
3rd. Year (75%)	$16.03	$3.61	$2.00	$0.30	$0.04
4th. Year (90%)	$19.23	$3.61	$2.00	$0.30	$0.04

SPECIAL CONDITIONS

Master Mechanics, Group A classifications, and Oilers when part of a crew, shall be Employed on a WEEKLY COMPENSATION basis.

All other employees shall be employed on a HOURLY COMPENSATION basis; unless notified by the employer not to report to work, shall receive (2) hours pay for reporting to work. if the employee starts to work, he shall receive (4) hours pay, if he works over (4) hours, he shall receive (8) hours pay. For inclement weather only it will be 2, 4, 6, and 8 hours of pay increments.

Oilers are required on equipment of two yard capacity (bucket or hoe) and over, and over (80) ton cable crawler cranes. Oilers are required on all truck cranes, tower cranes, rotary drills on caisson work, draglines, piledriving machines, standard gauge locomotives and trench machines (over 24" wide). Oiler classifications are not applicable to scrapers, dozers, loaders, etc.

Boom Pay of $0.50 per hour worked will be recognized for lattice boom crane Operator (only) with combined main boom and live jib over 150 feet in length.

Wage Schedule No. PLA 12.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 12.2 dated 10-01-94.

SPECIAL CONDITIONS (Continued)

GROUP A: Includes Boom Trucks; Cableways; Cherry Pickers; Combination-Concrete Mixers & Towers; All Concrete Pumps with booms; Cranes (all types); Derricks (all types); Draglines; Dredges; Elevating Graders or Euclid loaders; Gradalls; Helicopter Operators and Winch Operators; Hoes (all types); Hoists (two or more drums); Hydraulic Gantry; Laser finishing Machines; Lift Slab or Panel Operators; Locomotives; Maintenance Engineers (mechanics and welders); Mixers; Paving Mobile Concrete Pumps with booms; Pile Drivers; Power Shovels; Prentice Loader; Rotary Drills; Rail tamper; Side Booms; Slip form Pavers; Straddle Carriers; Trench Machines (over 24" wide) and Piggyback Operator.

GROUP B: Includes Asphalt Pavers; Bulldozers; C.M.I. type equipment; Concrete grinder/planer; Endloaders; Kolman-type Loaders; Lead Greasemen; Mucking Machines; Pettibone-Rail Equipment; Power Graders; Power Scoops; Power Scrapers; Push Cats and Vermeer-type Concrete Saw.

GROUP C: Includes A-frames; Air compressors shafts or tunnels; Asphalt rollers; Boilers; All Concrete Pumps without Booms; 5" system; Forklifts; Hoists (with one drum); House Elevators; Man lifts; Mud Jacks; Pressure Grouting; Pump Operators (well points); Pumps 4" and over; Submersible Pumps; Switch & Tile Tampers; Trench Machines (24" and under) and Utility/Small Equipment Operators.

GROUP D: Includes Ballast Relocators; Backfillers and Tampers; Batch Plant Operators; Bobcat/Skid steer loaders; Burlap and Curing Machines; Clefplanes; Compressors; Concrete Mixers; Concrete Pumps without booms (4" or smaller system); Concrete Spreading Machines; Conveyors; Crushers; Drum Fireman in asphalt plants; Farm-type tractors; Finishing Machines; Form Trenchers; Generators; Gunite Machines; Hydro-seeders; Pavement Breakers; Post Drivers; Pressure Pumps (over 1/2"); Road Widening Trenchers; Rollers (except asphalt); Self-Propelled Power Spreaders and Sub-graders; Shotcrete Machines; Tractors pulling sheepfoot; VAC/AllS; Vibratory Compactors; Welder Operators and Post Hole Diggers.

GROUP E: Includes Boilers; Light Plant Operators; Masonry Forklifts; Oilers/ Signalman; Power Driven Heaters; Power Scrubbers; Power Sweepers; Seamers; Pumps (under 4") and Submersible Pumps (under 4").

APPENDIX A

FERMCO-FERNALD, OH
PROJECT LABOR AGREEMENT

Wage Schedule No. PLA 13.3 dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 13.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: **PAINTERS (PA)**

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$20.81
Blasting (plus $0.75)	$21.56
Brush	$20.81
Spray (plus $0.50)	$21.31
Foreman (plus $1.00)	$21.81
General Foreman (plus $1.50)	$22.31
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$1.85 per hour worked. contribution.
Pension(s):	$1.90 per hour paid. contribution. (1)
App. and Training(s):	$0.20 per hour worked. contribution.
Vacation(s):	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

(1) Does not increase on overtime.

Wage Schedule No. PLA 13.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96.
This supersedes PLA 13.2 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

	Base Wage Rate		H&W	Pension	App.
1st Year	45%	$9.36	$1.85	$0.00	$0.20
2nd Year	50%	$10.41	$1.85	$0.00	$0.20
3rd Year	55%	$11.45	$1.85	$0.90	$0.20
4th Year Advanced	60%	$12.49	$1.85	$0.90	$0.20
5th Year Advanced	65%	$13.53	$1.85	$0.90	$0.20
6th Year Advanced	75%	$15.61	$1.85	$0.90	$0.20

SPECIAL CONDITIONS

None at this time.

CORRECTION 2/15/96

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Wage Schedule No. PLA 14.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 14.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: **PIPEFITTERS (PF)**

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 03-01-96
Journeyman	$22.81
Foreman (plus $1.00)	$23.81
General Foreman (plus $1.50)	$24.31
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$2.40 per hour paid, contribution.
Pension(s):	$2.75 per hour paid, contribution.
App. and Training(s):	$0.14 per hour paid, contribution.
Supl. Unemp. (SUB):	$0.38 per hour paid, contribution.
Drug Free Workplace:	$0.01 per hour paid, contribution.
Vacation(s):	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

CORRECTION 2/15/96 DJC

Wage Schedule No. PLA 14.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 14.2 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

	Base Wage Rate	H&W	Pension	App.	SUB
1st. Year (40%)	$8.92	$2.02	$0.00	$0.14	$0.38
2nd. Year (44%)	$9.82	$2.02	$0.00	$0.14	$0.38
3rd. Year (48%)	$10.71	$2.21	$1.51	$0.14	$0.38
4th. Year (55%)	$12.27	$2.21	$1.51	$0.14	$0.38
5th. Year (70%)	$15.62	$2.40	$2.75	$0.14	$0.38

SPECIAL CONDITIONS
When the Employer and Union arrange for testing or accepting MCA certifications, the welders who test will be compensated.

Note: Effective March 1, 1996 the amount of $.50 was taken from the SUB Fund and added to the hourly wage rate in accordance with Article XV, Section 15-3 of the Project Labor Agreement.

APPENDIX A

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Wage Schedule No. PLA 16.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 16.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: PLUMBERS (PL)

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$22.08
Foreman (plus $1.00)	$23.08
General Foreman (plus $1.50)	$23.58
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$3.79 per hour paid, contribution.
Pension(s):	$2.10 per hour paid, contribution.
App. and Training(s):	$0.20 per hour paid, contribution.
Supl. Unemp. (SUB):	$0.70 per hour paid, contribution.
Vacation(s):	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

Wage Schedule No. PLA 16.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 16.2 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

	Base Wage Rate	H&W	Pension	App.	SUB
1st Year	$6.64	$3.49	$0.00	$0.15	$0.00
2nd Year	$8.50	$3.49	$0.00	$0.15	$0.70
3rd Year	$9.92	$3.49	$1.70	$0.15	$0.70
4th Year	$11.70	$3.49	$1.70	$0.15	$0.70
5th Year	$13.56	$3.49	$1.70	$0.15	$0.70

SPECIAL CONDITIONS

None at this time.

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Wage Schedule No. PLA 15.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 15.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: PLASTERERS (PR)

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$20.33
Foreman (plus $1.00)	$21.33
General Foreman (plus $1.50)	$21.83
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$0.00 per hour paid. contribution.
Pension(s):	$2.50 per hour paid. contribution.
App. and Training(s):	$0.15 per hour paid. contribution.
Vacation(s):	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

Wage Schedule No. PLA 15.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 15.2 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

PLASTERERS

	Base Wage Rate	H&W	Pension	App.
1st 900 Hours	45% (1)	$1.50	$0.00	$0.15
2nd 900 Hours	50%	$1.50	$0.00	$0.15
3rd 900 Hours	55%	$1.50	$0.00	$0.15
4th 900 Hours	60%	$1.50	$0.00	$0.15
5th 900 Hours	65%	$1.50	$2.50	$0.15
6th 900 Hours	70%	$1.50	$2.50	$0.15
7th 900 Hours	80%	$1.50	$2.50	$0.15
8th 900 Hours	90%	$1.50	$2.50	$0.15

(1) Calculated as percent of Journeyman Base Wage Rate.

SPECIAL CONDITIONS

None at this time.

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Wage Schedule No. PLA 17.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 17.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: ROOFERS (RF)

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$21.68
Foreman (plus $1.00)	$22.68
General Foreman (plus $1.50)	$23.18
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$0.00 per hour worked, contribution.
Pension(s):	$2.50 per hour worked, contribution.
App. and Training(s):	$0.08 per hour worked, contribution.
Vacation(s):	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

Wage Schedule No. PLA 17.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 17.2 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

		Base Wage Rate	H&W	Pension	App.
1st Year	(60%)	$13.01	$0.00	$0.00	$0.08
2nd. Year	(70%)	$15.18	$0.00	$0.00	$0.08
3rd. Year	(80%)	$17.34	$0.00	$0.00	$0.08

SPECIAL CONDITIONS

None at this time.

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Wage Schedule No. PLA 19.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 19.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: SPRINKLER FITTERS (SF)

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$21.45
Foreman (plus $1.00)	$22.45
General Foreman (plus $1.50)	$22.95
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$3.40 per hour worked, contribution.
Pension(s):	$2.70 per hour worked, contribution.
App. and Training(s):	$0.18 per hour worked, contribution.
Vacation(s):	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

SPECIAL CONDITIONS

None at this time.

Wage Schedule No. PLA 19.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 19.2 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

INDENTURED BEFORE APRIL 1, 1991

Grade 1 Apprentices	Base Wage Rate	H&W	Pension	App.
Class 1 (1)	35% (2)	$3.40	$0.00	$0.18
Class 2	39%	$3.40	$0.00	$0.18
Class 3	43%	$3.40	$0.00	$0.18
Class 4	47%	$3.40	$0.00	$0.18
Grade 2 Apprentices				
Class 1 (1)	50% (2)	$3.40	$2.70	$0.18
Class 2	55%	$3.40	$2.70	$0.18
Class 3	60%	$3.40	$2.70	$0.18
Class 4	65%	$3.40	$2.70	$0.18
Class 5	70%	$3.40	$2.70	$0.18
Class 6	75%	$3.40	$2.70	$0.18
Class 7	80%	$3.40	$2.70	$0.18
Class 8	85%	$3.40	$2.70	$0.18

INDENTURED AFTER APRIL 1, 1991

Grade 1 Apprentices				
Class 1 (1)	38% (2)	$3.40	$0.00	$0.18
Class 2	41%	$3.40	$0.00	$0.18
Class 3	45%	$3.40	$0.00	$0.18
Class 4	50%	$3.40	$0.00	$0.18
Grade 2 Apprentices				
Class 1 (1)	56% (2)	$3.40	$2.70	$0.18
Class 2	62%	$3.40	$2.70	$0.18
Class 3	68%	$3.40	$2.70	$0.18
Class 4	74%	$3.40	$2.70	$0.18
Class 5	80%	$3.40	$2.70	$0.18
Class 6	85%	$3.40	$2.70	$0.18

(1) Classes are in six month increments.
(2) Calculated as percent of Journeyman Base Wage Rate.

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Wage Schedule No. PLA 18.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 18.2 dated 10-01-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: SHEET METAL WORKERS (SM)

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$19.38
Foreman (plus $1.00)	$20.38
General Foreman (plus $1.50)	$20.88
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate, no pension for first 4000 hours and no SASMI contribution.
Apprentices (DOL-BAT Registered)	Reference page Two for details.

FRINGES

Health and Welfare:	$3.07 per hour paid, contribution.
Pension(s):	$2.40 per hour paid, contribution.
App. and Training(s):	$0.21 per hour paid, contribution.
SASMI:	$0.00 per hour paid, contribution.
SUB:	$0.85 per hour paid, contribution.
Vacation(s):	Deduction from pay with signed authorization from employee.
Dues:	Deduction from pay with signed authorization from employee.

Wage Schedule No. PLA 18.3, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 18.2 dated 10-01-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

	Base Wage Rate	H&W	Pension	App.	SUB
A1 1st Period (1)	35% (2)	$2.46	$0.00	$0.21	$0.43
A2 2nd Period	35%	$2.46	$0.00	$0.21	$0.43
A3 3rd Period	40%	$2.46	$0.00	$0.21	$0.43
A4 4th Period	45%	$2.46	$0.00	$0.21	$0.43
A5 5th Period	50%	$3.07	$2.40	$0.21	$0.43
A6 6th Period	55%	$3.07	$2.40	$0.21	$0.43
A7 7th Period	60%	$3.07	$2.40	$0.21	$0.43
A8 8th Period	65%	$3.07	$2.40	$0.21	$0.43
A9 9th Period	70%	$3.07	$2.40	$0.21	$0.43
A10 10th Period	75%	$3.07	$2.40	$0.21	$0.43

(1) Periods are in six month increments.
(2) Calculated as percent of Journeyman Base Wage Rate.

SPECIAL CONDITIONS

Standard SMW-SMACNA language on off-site prefabrication shall apply, with local union rate as applicable off-site rate.

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PROJECT LABOR AGREEMENT

Wage Schedule No. PLA 20.4, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 20.3 dated 12-02-94.

MANUAL CRAFT WAGE CLASSIFICATIONS

Craft Designation: **TEAMSTERS (TM)**

CLASSIFICATIONS	EFFECTIVE DATE AND BASE WAGE RATE 10-01-95
Journeyman	$17.75
Group A	$17.75
Group B	$17.75
Group C	$17.75
Foreman (plus $1.00)	$18.75
General Foreman (plus $1.50)	$19.25
Non Journeyman (Temporary Employees)	Maximum 50% of Journeyman rate and no pension for first 4000 hours.
Apprentices (DOL-BAT Registered)	Not Applicable at present time

FRINGES

Health and Welfare:	$140.70 per payroll week, contribution. (1)
Pension(s):	$100.00 per payroll week, contribution. (1)
Vacation(s): (contribution)	1 week with 1 year of 60% service. 2 weeks with 2 years of 60% service. 3 weeks with 10 years of 60% service.
Dues:	Deduction from pay with signed authorization from employee.

(1) Will increase or decrease in accordance with applicable changes in opposite Trust Documents.

Wage Schedule No. PLA 20.4; dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 20.3 dated 12-02-94.

SPECIAL CONDITIONS

Group A: Euclid Wagons; End Dumps; Lowboys; Heavy Duty Equipment; Tractor- Trailer Combinations and Drag Drivers.

Group B: All other Teamster driven light vehicles, except as modified by language in the PLA.

Group C: Warehousemen (as required on the Project site in accordance with the PLA.)

Temporary Summer Help Program (TSHP) shall apply to Project site with a total hourly rate of $12.00 per hour with fringes paid in the hourly rate and therefore no H&W or Pension coverage for this classification.

TEAMSTERS (TM)

Wage Schedule No. PLA 20.4, dated 10-01-95. Effective from 10-01-95 through 09-30-96. This supersedes PLA 20.3 dated 12-02-94.

APPRENTICE CLASSIFICATIONS
(DOL-BAT Registered)

	Base Wage Rate	H&W	Pension	App.
1st Year	$12.56	$0.00	$0.00	$0.00
2nd. Year	$14.66	$0.00	$0.00	$0.00
3rd. Year	$16.75	$0.00	$0.00	$0.00

SPECIAL CONDITIONS

None at this time.

Addendum
to
Project Labor Agreement

Consistent with the terms and conditions as established in Article XIX, Section 19-3 of the Project Labor Agreement (PLA), the purpose of this document is to supplement the existing agreement entered into by Fernald Environmental Restoration Management Corporation (FERMCO), hereafter referred to as the Company, and the Greater Cincinnati Building and Construction Trades Council (GCBCTC), hereafter referred to as the Union.

As with the Project Labor Agreement (PLA), this Addendum is applicable to all of the Company's subcontractors.

The Company and the Union mutually agree this Addendum will provide clarification, understanding and enhancement of the relationship that has been established to fulfilling the Company's mission in remediation and cleanup of the Fernald Environmental Management Project (FEMP):

A. Safety and Health

Consistent with the intent of the Project Labor Agreement (PLA), the provisions of FERMCO's Safety and Health Plan extend to employees working under the PLA. These include:

The Right to know hazards.
The Right to report concerns or violations.
The Right to access safety and health information.
The Right to have input regarding safety and health issues.

B. Section 3161 of the National Defense Authorization Act - Fiscal Year 1993

The Company will apply the provisions of 3161 consistent with guidelines established and directed by the Department of Energy.

C. Off Site New Construction Work

If there is a need in the future to construct a permanent facility or structure off site for the Fernald Environmental Management Project (FEMP), and if the Company has construction management responsibility for this same facility or structure, then the Company recognizes the Union will perform this work in accordance with the PLA. This would include demolition activities to facilitate construction of permanent facilities.

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D. Workscope

The intent of Article II Section 2-2; category one work, as specified in the PLA, is that this category includes but is not limited to:

Operable Unit 1 - Waste Pit Area

* Construct access roads & parking lot

  - excavation & dirt work
  - grade & pave
  - construct temporary change facilities
  - foundation & civil work
  - mechanical work
  - electrical work

* Remedial waste treatment and disposal

  - excavate material from waste pits (dry) (drag line, dozers, vibrator roller, conveyors, etc.)
  - construct disposal cells or other facilities

* Remedial waste treatment and disposal

  - excavate material from ponds (wet) (dredging machine, conveyors, drag line, backhoe, etc.)
  - construct disposal cells or other facilities

* Install portable soil drying unit

  - grade site
  - foundation & civil work
  - electrical work

* Construct prep building

  - foundation & civil work, pour slab, erect steel
  - electrical work

Operable Unit 2 - Other Waste Units

* Site prep of OU2 area

  - excavation & dirt work
  - construct access roads & parking lot
  - pave areas

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* Construct temporary change facilities

  - foundation & civil work
  - electrical work
  - mechanical work

* Remedial waste treatment and disposal

  - excavate solid waste landfill, sludge ponds & fly ash pile (front end loaders, dozers, dump trucks, backhoe, etc.)
  - construct disposal cells or other facilities

* Construct prep building

  - excavation & dirt work
  - foundation & civil work
  - electrical work
  - mechanical work

* Construct (excavate) tumulus cell (if concept is used) (belly scrapper, sheepfoot rollers, pugmill, crusher, etc.)

  - excavation & dirt work

Operable Unit 3 - Production Area

* Asbestos removal/abatement (as part of demolition)

  - install temporary facilities as required
  - install scaffolding
  - install abatement containment barriers
  - wipedown lockdown within containments
  - demolish containment upon final clearance

* Lockdown

  - modify scaffold
  - execute lockdown
  - remove scaffold systems & lockdown equipment

* Dismantlement/Demolition

  - remove process equipment (equip., piping, elect.,HVAC)
  - coat/lockdown exterior walls
  - dismantle/deconstruct/disassemble structures
  - seal floor (pad)

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Operable Unit 4 - Silos 1 thru 4

* Construct bridge structure over silos 1,2,& 3 (silo 4 is empty and will be used as a pilot project)

  - excavation & dirt work
  - foundation & civil work
  - electrical work
  - mechanical, piping, & tank work

* Construct Vitrification Pilot Plant

  - excavation & dirt work
  - foundation & civil work
  - electrical work
  - mechanical, piping, & tank work

* Disassemble/deconstruct bridge structure and components

* Dismantlement/demolition of silos

  - disassemble/demolish silo
  - remove sub-soil from silo base

Operable Unit 5 - Environmental Media

* Construct soil washing facility

  - excavation & dirt work
  - foundation & civil work
  - electrical work
  - mechanical, piping & tank work
  - washers, conveyors, hoppers, chutes

* Construct advanced waste water treatment facility

  - excavation & dirt work
  - foundation & civil work
  - electrical work
  - mechanical, piping, & tank work

* Construct south plume interim treatment facility

  - excavation & dirt work
  - foundation & civil work
  - electrical work
  - mechanical, piping & tank work

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E. Successorship

The Company and the GCBCTC recognize and agree that this Agreement is meant to be binding upon any successor contractor at the Fernald Environmental Management Project (FEMP). In the furtherance of that principle, the Company will immediately upon learning that it's contract with the Department of Energy is being put out to bid, notify all prospective bidders that there is a Project Labor Agreement in effect, that it is intended to be binding upon any successor contractor, and provide the prospective contractors copies of the current PLA including Appendix A.

F. Special Shift Change to Minimize Heat Stress

An employer may implement a special shift on a 4-10's or a 5-8's schedule by choosing any starting time prior to 6:00 a.m. to minimize hazards of heat related conditions. Hourly wages paid would be at the applicable straight time rates. FERMCO must inform the Greater Cincinnati Building and Construction Trades Council (GCBCTC) two weeks prior to the start of the special shift, stating the starting time, date, and expected completion. It must be at least one week in duration.

The 4-10's special shift will be 9½ hours work for 10 hours pay, with ½ hour paid lunch break, and the 5-8's special shift will be 7½ hours work for 8 hours pay, with ½ hour paid lunch break.

Jerry Monahan
Executive Secretary
GCBCTC
4/8/96
Date

Jim Hanna
Director of Industrial Relations
FERMCO
4/8/96
Date

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JH 4/8/96 JMH 4/8/96

GREATER CINCINNATI BUILDING & CONSTRUCTION TRADES COUNCIL (GCBCTC)

1550 Chase Ave.
Cincinnati, Oh 45223-2100
(513) 541-0328 (office)
(513) 541-2133 (fax)
Georgia Sparks, Office Secretary

Lester Willmoth, President
(513) 221-6955 (Office)

Jerry Monahan, Executive Secretary
(513) 541-0328 (Office)

Union	Craft	BA	Address	Office No.	Fax No.
Asbestos Workers, Local 8	AW	Bill Carter	1216 McMillan Rd. Cincinnati, OH 45206	(513) 221-5969	(513) 221-5455
Boilermakers, Local 105	BM	Don Hamilton	20 E. Water St. Chillicothe, OH 45601	(614) 289-4255	(614) 289-4607
Bricklayers, Local 18	BL	Jim Reid	Tile & Terrazzo, Local 18 Tile Helpers, Local 72 1550 Chase Ave. Cincinnati, OH 45223	(513) 541-5806	(513) 541-2133
Carpenters D.C.	CP	Ken Busch Dan McElroy	130 Tri-County Parkway Suite 403 Cincinnati, OH 45246	(513) 772-1555	(513) 772-1570
Eelctricians, Local 212	EL	Frank Butler Bill Cunningham Walt Zimmer	1216 McMillan Rd. Cincinnati, OH 45206	(513) 559-0200	(513) 559-0734
Cement Masons, Local 524	CM	Melvin Reeves	3032 Woodburn Ave. Cincinnati, OH 45206	(513) 221-1313	Call to fax
Glaziers, Local 387	GL	Lester Willmoth	1216 McMillan Rd. Cincinnati, OH 45206	(513) 221-6955	(513) 221-7990 Call to fax
Iron Structural Workers, Local 44	IS	Leroy Oberding Ray Shinkle	4850 Madison Rd. Cincinnati, OH 45227	(513) 271-4444	(513) 271-8888
Laborers, Local 265	LB	Robert Richardson Ron Weber	3457 Montgomery Rd. Cincinnati, OH 45207	(513) 221-5260	(513) 221-5573

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Union	Craft	BA	Address	Office No.	Fax No.
Lathers, Local 47-L	LA	Dan McElroy	130 Tri-County Parkway Suite 403 Cincinnati, OH 45246	(513) 772-1555	(513) 772-1570
Millwrights, Local 1066	MW	Carl Morgan	130 Tri-County Parkway Suite 403 Cincinnati, OH 45246	(513) 772-1555	(513) 772-1570
Operating Engineers, Local 18	OE	Bill Durdett Rick Dalton	9730 Reading Rd. Cincinnati, OH 45215	(513) 733-5575 (513) 890-5914	(513) 733-4672 (513) 890-5180
Painters D.C., Local 12	PA	Ralph Jones	1216 McMillan Rd. Cincinnati, OH 45206	(513) 221-7990	Call to fax
Pipe Fitters, Local 392	PF	Dave Jeffers Jim McCarthy Rick Hurrelbrink	1228 Central Parkway Cincinnati, Oh 45214	(513) 241-1760	(513) 241-7565
Plasterers, Local 1	PR	Ed Hartkemeyer	3032 Woodburn Ave. Cincinnati, OH 45206	(513) 221-1313	Call to fax
Plumbers, Local 59	PL	Robert Jump Jim Fangman	19 Knollcrest Dr. Cincinnati, OH 45237	(513) 821-7124	(513) 821-0932
Rod Workers, Local 372	IR	Tim Middendorf	1579 Summit Rd. Cincinnati, OH 45237	(513) 761-3720	(513) 761-3721
Roofers, Local 42	RF	Tim Burke	1579 Summit Rd. Cincinnati, OH 45237	(513) 821-3689	(513) 761-3721
Sheet Metal Workers, Local 24	SM	Joe Zimmer	1579 Summit Rd. Cincinnati, OH 45237	(513) 821-5771	(513) 821-7849
Sprinkler Fitters	SF	Gerald Singleton	2302 Emerson Ave. Louisville, KY 40205	(502) 458-1450	(502) 458-3430
Sprinkler Fitters	SF	Ray Pohalla	4629 Westwood St. Youngstown, OH 44515	(216) 792-2613	(216) 792-7062
Teamsters, Local 100	TM	Art Green	2100 Oak Rd. Cincinnati, OH 45241	(513) 769-5100	(513) 769-4420

1/01/94
tlp/gcbctcrp

Attachment J.4.9
FERMCO Memo M:ADM:(IR):94-1098, 5/24/94,
Re: "Fernald Site Work Execution Agreement"

329

RECEIVED
FERMCO

94 MAY 25 PM 1:04

PROCUREMENT

Fernald Environmental
FERMCO
Restoration Management Corporation

INTEROFFICE MEMORANDUM

To:	Mark F. Albertin	Date:	May 24, 1994
Location:	Fernald	Reference:	
From:	R. G. Weatherred RGW	FERMCO #:	M:adm:(IR):94-0198
Location:	Fernald	Client:	DOE DE-AC05-92OR21972
Extension:	738-6297	Subject:	Ironworkers and Laborers Agreement

c: File Record Storage Copy 106.4.8

Attached is the above referenced agreement entitled "FERNALD SITE WORK EXECUTION AGREEMENT". The agreement has been reviewed in detail with Ironworkers Local 44 and Laborers Local 265. They both agree with the document in concept and will support its implementation exclusively for the Fernald Site. They will not sign the document but want it to be a FERMCO generated and implemented document. Please proceed to implement this document to all subcontractors.

RGW:wjb

FERNALD SITE
WORK EXECUTION AGREEMENT

Hoisting and Rigging Work Functions in Support of Demolition Activities

Ironworkers Local 44 Cincinnati, Ohio and Laborers Local 265 Cincinnati, Ohio in cooperation with FERMCO jointly acknowledge this Work Execution Agreement for work at the Department of Energy (DOE) Fernald Environmental Management Project (FEMP) located at Fernald, Hamilton County, Ohio. This agreement is reached with the following understandings:

- Safety, economy and efficiency are the primary governing criteria
- Compliance with the spirit and intent of Article I, Section 1-1, Article III, Section 3-3, Article X, Section 10-3 and other related provisions of the Project Labor Agreement (PLA) dated March 30, 1993
- Compliance with the requirements mandated by the Department of Energy "Hoisting and Rigging Manual" (DOE-HRM) dated April 1993 and direction from DOE Fernald (DOE-FN) to FERMCO.

This Work Execution Agreement applies to all work functions governed by the DOE-HRM dated April 1993 (or subsequent revisions or successor document), and requires compliance with the following Implementation Steps:

1) Each subcontractor who's work scope includes demolition, dismantling, disassembly or deconstruction work functions that involves hoisting and rigging activities is required to have such work functions performed by qualified journeyman employees who meet the minimum requirements of DOE-HRM Sections 2.3 and 11.3.2.

2) In compliance with Implementation Step 1 above local Unions will refer qualified journeyman employees to subcontractors and verify that such employees performing hoisting and rigging work functions are appropriately qualified. Verifications will be confirmed by the local Union to the subcontractor by execution of a form provided by FERMCO which documents compliance with applicable provisions of the DOE-HRM. Sample copies of forms are attached.

3) Local Unions who do not currently have a registered and approved Apprenticeship Program with the Department of Labor (DOL) or State of Ohio agency to comply with Implementation Step 2 above may develop appropriate alternatives. Any alternative program must meet the minimum requirements of the DOE-HRM and must be reviewed and approved by FERMCO.

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4) Each subcontractor when performing hoisting and rigging work functions as referenced in Implementation Steps 1 and 2 above must have actively employed a minimum of one (1) qualified journeyman Ironworker who is verified by Ironworkers Local 44 or Laborers Local 265 (after development of their program and FERMCO approval) as a "Heavy Rigger".

4A) Additional qualified journeyman Ironworkers, (Heavy Rigger or Basic Rigger classification), may be required on a unique hoisting and rigging team for the demolition, disassembly or dismantling of steel structures, modular components of steel structures or major components of machinery and equipment and unique or heavy-lift rigging operations.

4B) Each such rigging operation is to be considered as an independent team and consist of a minimum of one (1) qualified journeymen Ironworker with "Heavy Rigger" verification to a maximum of four (4) qualified journeymen employees with appropriate verification from the local Union.

5) The number of qualified journeyman Ironworkers required as referenced in Implementation Step 4 above shall be determined by the subcontractor superintendent, FERMCO construction manager, FERMCO safety representative, FERMCO Industrial Relations and the requirements of the subcontractor's FERMCO approved Rigging Plan.

Subcontractor employees represented by Ironworkers Local 44 and Laborers Local 265 agree to work together in power hoisting and rigging teams performing demolition of structures and facilities allowing for maximum utilization of safety, efficiency and economy of the teams.

This Work Execution Agreement has no application at any other work locations within the geographical area of the two local Unions and does not constitute local area prevailing practice except, and only at the FEMP site in order to maximize safety, efficiency and economy and promote labor-management harmony.

FERMCO reserves the right to define and interpret the application and implementation of this agreement in all circumstances. This agreement is attested to May 24, 1994.

Attachment J.4.10
Greater Cincinnati Building & Construction Trades Council (GCBCTC)
List of Contacts

GREATER CINCINNATI BUILDING & CONSTRUCTION TRADES COUNCIL (GCBCTC)

1550 Chase Ave.
Cincinnati, Oh 45223-2100
(513) 541-0328 (office)
(513) 541-2133 (fax)

Lester Willmoth, President
(513) 221-6955 (Office)

Georgia Sparks, Office Secretary

Jerry Monahan, Executive Secretary
(513) 541-0328 (Office)

Union	Craft	BA	Address	Office No.	Fax No.
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Boilermakers, Local 105	BM	Don Hamilton	20 E. Water St. Chillicothe, OH 45601	(614) 289-4255	(614) 289-4607
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Laborers, Local 265	LB	Robert Richardson Ron Weber	3457 Montgomery Rd. Cincinnati, OH 45207	(513) 221-5260	(513) 221-5573

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Union	Craft	BA	Address	Office No.	Fax No.
Lathers, Local 47-L	LA	Dan McElroy	130 Tri-County Parkway Suite 403 Cincinnati, OH 45246	(513) 772-1555	(513) 772-1570
Millwrights, Local 1066	MW	Carl Morgan	130 Tri-County Parkway Suite 403 Cincinnati, OH 45246	(513) 772-1555	(513) 772-1570
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Sprinkler Fitters	SF	Ray Pohalla	4629 Westwood St. Youngstown, OH 44515	(216) 792-2613	(216) 792-7062
Teamsters, Local 100	TM	Art Green	2100 Oak Rd. Cincinnati, OH 45241	(513) 769-5100	(513) 769-4420

Attachment J.4.11

Davis-Bacon Wage Decision No. 960034 for Hamilton County, Ohio

DAVIS-BACON WAGE DECISION NO. 960034
FOR HAMILTON COUNTY, OHIO
MODIFICATION NO. 1 DATED MAY 3, 1996

COUNTY(ies):
HAMILTON

BROH0018C 06/01/1995

	Rates	Fringes
BRICKLAYERS	19.16	4.62

BROH0018E 06/01/1995

	Rates	Fringes
TILE SETTERS	20.72	3.86

CARP1311L 06/01/1995

	Rates	Fringes
CARPENTERS (Including Drywall Hangers)	18.90	4.625

ELEC0212F 01/01/1995

	Rates	Fringes
ELECTRICIANS	17.75	7.72

* ENGI0018J 05/01/1996

	Rates	Fringes
POWER EQUIPMENT OPERATORS:		
Crane (Boom & Jib 250' & Over)	21.94	5.95
Crane (Boom & Jib Over 180' through 249')	21.69	5.95
Crane (Boom & Jib 150' through 180')	21.44	5.95
Backhoe; & Crane	21.19	5.95

IRON0044C 12/01/1995

	Rates	Fringes
IRONWORKERS:		
Ornamental; Structural	19.75	6.95

IRON0372C 12/01/1995

	Rates	Fringes
IRONWORKERS, Reinforcing:		
Up to & including 25-mile radius of Hamilton County Courthouse	19.72	6.54
Beyond 25-mile radius of Hamilton County Courthouse	19.97	6.54

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DAVIS-BACON WAGE DECISION NO. 960034
FOR HAMILTON COUNTY, OHIO
MODIFICATION NO. 1 DATED MAY 3, 1996

LABO0265B 10/01/1995

	Rates	Fringes
LABORERS:		
Mason Tender	17.50	3.80

* PAIN0012I 06/01/1995

	Rates	Fringes
PAINTERS (Including Drywall Finishers)	17.75	3.80

PLAS0001H 06/22/1995

	Rates	Fringes
PLASTERERS:		
Pointing-Taping of Drywall Surfaces, Acoustical Finishes on Concrete & Drywall Surfaces	16.15	2.60
All Other Work	19.00	2.60

PLUM0059F 06/01/1995

	Rates	Fringes
PLUMBERS	21.53	6.74

PLUM0392C 01/01/1996

	Rates	Fringes
PIPEFITTERS (Including HVAC Work)	21.73	6.12

ROOF0042B 08/01/1995

	Rates	Fringes
ROOFERS:		
Roofers	21.40	2.69
Pitch	22.40	2.69

SFOH0669E 01/01/1995

	Rates	Fringes
SPRINKLER FITTERS	19.90	6.28

SHEE0024D 07/01/1995

	Rates	Fringes
SHEET METAL WORKERS (Including HVAC Duct Work)	19.06	6.53

SUOH1031A 02/01/1988

	Rates	Fringes
CEMENT MASONS	14.57	2.75
GLAZIERS	13.78	1.65
LABORERS, Unskilled	12.08	2.60

DAVIS-BACON WAGE DECISION NO. 960034
FOR HAMILTON COUNTY, OHIO
MODIFICATION NO. 1 DATED MAY 3, 1996

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==========

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(v)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

END OF GENERAL DECISION

Attachment J.4.12
FAT&LC Wage Position Descriptions

ASSISTANT BOILER OPERATOR HELPER

Major Duties and Responsibilities:

Assists Boiler Operator and Boiler Operator Helper in operation of boilers in Power Plant. Assists in the operation of ash conveying system to remove ashes and fly ash. Removes ash and clinkers from boiler furnaces after properly positioning sliding gates in conveyor lines and manipulating water and steam valves. Assists in operation of ash unloading and disposal equipment. Inspects silo for fill level. Checks cleanout doors and gates on receivers and removes accumulated ash manually. Operates soot blowers as directed, by manipulating chain operated valves. Checks operation of draft fans, turbines, and motor drives. May check and maintain oil levels in all bearings. Makes changes in fans and adjustments of cooling water as directed by Boiler Operator Helper, Boiler Operator, or Stationary Engineer. May run water analyses on boiler and feed water to determine hardness, alkalinity, sulphite, etc. Charges chemical feed tanks, as directed, by weighing chemicals, manipulating water valves to fill tank and agitating manually. Checks coal in bunker. Positions coat chute sliding gate to operate drag conveyor. Takes readings of pressures, temperatures, flow and meters every hour and records on log sheets. Makes inspection of water in sump. Maintains area housekeeping, cleans ashes from boiler passes when required, and performs other related duties as assigned.

Qualifications:

High school graduate or equivalent. Boiler operation, water testing, air compressor operation, mechanical and mathematics aptitude desirable. Candidate must have a satisfactory performance record on current job with no indication of not being able to perform the duties directly related to this job vacancy notice.

LICENSE TRAINING WITHIN 6 MONTHS
REMOVAL FROM JOB IF NOT LICENSED IN 24 MONTHS

ASSISTANT PUMP OPERATOR

Major Duties and Responsibilities:

Assists Pump Operator in observing the operation of pumps and in making routine inspection of the water and waste treatment systems. Assists in alternating pumps and in performing routine assignments within the water treatment area proper. Obtains samples from water and waste systems, and may assist in their control tests. Cleans interior of systems, and may assist in their control tests. Reports unusual and unsafe conditions to Pump Operator or to Water Plant Operator or supervisor. Assists in preparing log sheets. Handles materials such as bags of lime and cylinders of chlorine, acid, etc. Maintains good housekeeping. Performs other related duties as assigned.

Qualifications:

High school graduate or equivalent. Experience in water treatment, sewage treatment, and/or waste disposal desirable. Mechanical and mathematics aptitude and knowledge of chemistry desired. To qualify, the candidate must have a satisfactory performance record on his/her current job with no indication of not being able to perform the duties directly related to this job vacancy notice.

LICENSE TRAINING WITHIN 6 MONTHS
REMOVAL FROM JOB IF NOT LICENSED IN 24 MONTHS

Job Code W77

Revision Date 04/91

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: ASSISTANT WATER PLANT OPERATOR

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES

Assists the Water Plant Operator to operate, inspect, control and maintain water and sewage plants and systems such as the primary treatment plant, zeolite softener, cooling tower, deionizing feed, storm and sanitary systems, and the incinerator.
Maintains and reviews log sheets, and inspects equipment controls and instruments, making necessary operational adjustments.
May obtain samples and maintain control of plants and systems through chemical and biological tests.
Reports to the Operator the condition of all equipment and the results of operating procedures.
Acts in operator's capacity during operator's lunch period.
Assists Operator in training and instructing Pump Operators or Assistant Pump Operators.
Responsible for notifying supervision of spills in affected area and may assist in removal of spills.
Must possess state issued Water and Sewage Plants Operator's license.
Requests maintenance and repair of equipment and follows through on necessary repairs.
Makes minor adjustments for protection of equipment and continuity of operation.
Maintains good housekeeping.
Performs other related duties as assigned.

QUALIFICATIONS:

Requires a minimum of five years experience in the Water/Wastewater Treatment field. Must possess at least a Class I license in Wastewater Works and a Class I license in Water Works, issued by the State of Ohio.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

Job Code W24

Revision Date 04/91 Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: BOILER OPERATOR

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Operates Power Plant bi\oilers, coal scales, stokers and combustion controls under the direction of the Stationary Engineer.
Manipulates steam and water valves on fans and pumps to provide sufficient heat and power at all times throughout project.
Observes meters, gauges and controls to maintain efficiency of boilers.
Directs helpers in inspection of fans, blowing of soot and pulling ashes.
Makes necessary changes in fans, pumps, combustion controls and turbines by manipulating valves. Records h readings of temperatures, flows and pressures on log sheets.
May run water analyses on boiler and feed water to determine hardness, alkalinity, sulphite, etc. Operates boiler blowdown valves and continuous blowdown.
Maintains stoker feeder control for even distribution of fuel on grates and proper level of coal and ash. Breaks clinkers manually with bar.
Maintains cleanliness of firing aisle and control panels.
Replaces Stationary Engineer during lunch periods or in case of emergencies.
Must possess state issued Stationary Engineer's license.
Directs and assists in area housekeeping and performs other related duties as assigned.

QUALIFICATIONS:

Requires minimum of five years experience in the following fields: operation of high pressure boilers, operation of steam turbines and electrostatic precipitators. Must possess Ohio State issued Stationary Engineer's license.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	D

7/27/

BOILER OPERATOR HELPER

Major Duties and Responsibilities:

Assists Boiler Operator in operation of boilers in Power Plant. Operates ash conveying system to remove ashes and fly ash. Removes ash and clinkers from boiler furnaces after properly positioning sliding gates in conveyor lines and manipulating water and steam valves. Operates ash unloading and disposal equipment. Inspects silo for fill level. Checks cleanout doors and gates on receivers and removes accumulated ash manually. Operates soot blowers as directed, by manipulating chain operated valves. Checks operation of draft fans, turbines, and motor drives. May check and maintain oil levels in all bearings. Makes changes in fans and adjustments of cooling water as directed by Boiler Operator or Stationary Engineer. May run water analyses on boiler and feed water to determine hardness, alkalinity, sulphite, etc. Charges chemical feed tanks, as directed, by weighing chemicals, manipulating water valves to fill tank and agitating manually. Checks coal in bunker. Positions coal chute sliding gate to operate drag conveyor. Takes readings of pressures, temperatures, flow and meters every hour and records on log sheets. Makes inspection of water in sump. Maintains area housekeeping, cleans ashes from boiler passes when required, and performs other related duties as assigned.

Qualifications:

High school graduate or equivalent. One year experience in boiler operation, water testing, air compressor operation. Mechanical and mathematics aptitude. Candidate must have a satisfactory performance record on current job with no indication of not being able to perform the duties directly related to this job vacancy notice.

LICENSE TRAINING WITHIN 6 MONTHS
REMOVAL FROM JOB IF NOT LICENSED IN 24 MONTHS

Job Code W04

Revision Date 04/91

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: BULLDOZER OPERATOR

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Operates bulldozer by manipulating various levers to push coal being unloaded from railroad cars onto stock pile.
Distributes and stacks coal as required.
Pushes coal from pile to reclaim hopper when necessary.
Keeps coal pile in orderly condition.
May operate coal handling equipment.
May operate car shaker to dislodge coal in car by manipulating push buttons.
Maneuvers coal cars on tracks by use of car jack or car puller.
Obtains and prepares coal samples for laboratory analyses as directed.
Maintains cleanliness of outside area, coal tunnel, bunkers and all coal handling equipment.
May clean out coal bunker when necessary.
Inspects and cleans elevator buckets and coal bulldozer and checks all equipment for proper lubrication.
Maintains drainage ditch around coal storage area to assure proper drainage.
Performs other related duties as assigned.

QUALIFICATIONS:

Must have experience in the operation of a front-end loader and bulldozer.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

Job Code W06

Revision Date 04/91 Profile No._____ 329

WAGE POSITION DESCRIPTION

JOB TITLE: CARPENTER

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Performs general carpentry work necessary to construct, install and maintain plant buildings, structural woodwork and equipment such as hinge and wood doors,floors, stairs, partitions, pallets, office and factory furniture.
Repairs roof leaks, builds, installs, or repairs necessary woodworking used in trucks, railroad cars, tanks, cooling towers, machinery and concrete work.
Fabricates and installs signs, bulletin and wall boards, etc.
Fabricates and repairs skids, crates, boxes and containers from wood or may fabricate from composition materials.
Installs fittings such as pipes, sleeves and bearing plates in connection with concrete work; bends and installs reinforcing rods.
Erects wood shoring and scaffolding when necessary.
Plans and lays out work from blueprints, drawings, specifications, models or verbal instructions.
Uses a variety of hand and portable power tools, carpenter shop machinery and equipment, and standard measuring instruments.
Makes standard shop computations relating to dimensions of work. Exercises proper safety methods and techniques.
Maintains good housekeeping.
Performs other related work as assigned.

QUALIFICATIONS:

Five years journeyman experience in an industrial plant or completion of an approved apprenticeship program in the craft.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

Job Code W21

Revision Date 04/91

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: DRY CLEANER

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Operates dry cleaning equipment through complete cleaning, extracting and reclaiming cycle to clean gloves or other protective clothing.

Adjusts equipment controls and pressures.

Sorts, loads and unloads material, and prepares material for shipment.

Observes pressure gauges and cleans filters as necessary.

Removes lint and dirt from machine.

Maintains proper levels of cleaning fluids.

Maintains daily records of operation and conducts solvent tests as necessary.

Maintains good housekeeping.

Performs other related duties as assigned.

QUALIFICATIONS:

High school education or equivalent. One year applicable experience.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE
000578					

Job Code W22

Revision Date 04/91 Profile No._____

329

WAGE POSITION DESCRIPTION

JOB TITLE: ELECTRICIAN

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Is responsible for installing, replacing and moving electric light and power lines and making electrical installations on machinery and equipment.

Operates electrical line truck and Plant 6 motor bay electrical equipment as required.

Is required to perform all types of electrical work such as: dismantling, replacing, repairing and maintaining electrical equipment such as electric light and power lines, light fixtures, switches, alarm systems, motors, transformers, etc., using hand or power tools as needed to perform the work.

Analyzes, diagnoses, and rectifies problems which occur in plant electrical systems.

Utilizes various testing equipment such as ampmeters, volt meters, high voltage testing equipment, etc.

Reads and follows blue prints, wiring diagrams and schematics in laying out, assembling, installing and testing electrical circuits, appliances and other similar equipment as directed.

Responsible for performing work to specifications and in accordance with plant procedures.

Maintains good housekeeping. Exercises proper safety techniques.

Performs other related work as assigned.

QUALIFICATIONS:

Five years journeyman experience as a maintenance electrician in an industrial plant or completion of an approved apprenticeship program in the craft.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

Job Code WUM

Revision Date 07/30/92 Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: HazWat (Chemical Operator)

PRIMARY FUNCTION: To perform inspecting, prepare and package low level and hazardous waste for storage and /or shipping. Perform sampling operations or characterization.

TOOLS AND EQUIPMENT: Ladders, Impact Wrenches, Socket Wrenches, Drills, Hand Stack. hoist, sampling equipment such as augers, pipe samplers and coliwasse.

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

1. Inspects containers for leakage, condition, proper labeling and storage configuration.
2. Inspects hazardous waste units for physical conditions, proper labeling, safety violation or deviation from establish SOP's
3. Performs housekeeping and safety inspection based on selected predetermined criteria.
4. Package and prepare for shipping per D.O.T. standards, low level and hazardous waste.
5. Receives applicable training as requires for tasks assigned.
6. Performs sampling for characterization in area assigned to identify materials or substances.
7. Performs cleaning tasks using appropriate equipment.

QUALIFICATIONS:

High school graduate or equivalent. Must be physically qualified. Where applicable, must have and be able to retain the physical requirements, wear chemical protective clothing and respiratory protection. Ability to work in poor working conditions. Frequent walking, standing, stooping and climbing. Shift work availability.

• - Nonessential Function
(Optional) - Optional depending on the department.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

030

Job Code ~~W30~~

Revision Date 04/91 Profile No._____ 329

WAGE POSITION DESCRIPTION

JOB TITLE: HEAVY EQUIPMENT OPERATOR

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Operates variety of electric, gasoline and diesel-powered equipment such as plane loader, yard lift, various capacity mobile cranes, bulldozer, front-end loader and other similar type heavy equipment.

Manipulates throttles, levers, gears, pedals, switches and other operational controls to load and unload, move, lift, stack, grade, level, pull or push material, direct, rock or other objects.

May make minor adjustments to equipment, and oil or grease parts of equipment as necessary.

Is responsible for checking equipment to assure proper and safe operation and reports malfunction or need of repair or maintenance to supervisor.

Compiles with all safety regulations.

Knows and observes all hand signals used in operation of equipment.

May be required to train other personnel in operation of equipment.

Performs housekeeping duties as required.

Performs other related duties as assigned.

QUALIFICATIONS:

High school graduate or equivalent. Five years applicable experience.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

Job Code W32

Revision Date 04/91 Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: INDUSTRIAL MECHANIC

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Responsible for maintenance and repair of the plant mobile equipment such as passenger cars, trucks, trailer, fork trucks, and other gasoline, battery and diesel-powered equipment.

Diagnoses causes of faulty operation.

Disassembles, overhauls and reassembles major units such as engines, transmissions, clutches and rear ends.

Replaces worn or broken parts, relines and adjusts brakes, aligns wheels, lubricates equipment, repairs, fills and bleeds hydraulic systems, etc.

Replace charge and maintain batteries.

Must be able to follow manufacture's specifications and repair procedures.

Repairs fenders, doors to other portions of auto and truck bodies.

Inspects equipment as part of the Preventive Maintenance Program.

Utilizes a variety of hand tools and testing and analyzing equipment, electric drill, grinders, buffers, etc.

Operates emergency vehicles according to established procedure.

Uses jacks and other devices to aid in repair work.

Maintains good housekeeping. Performs other related duties as assigned.

QUALIFICATIONS:

Five years journeyman experience in an industrial plant or completion of an approved apprenticeship program in the craft.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

Job Code W34

329

Revision Date 04/91

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: INSTRUMENT MECHANIC

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Exercises high degree of skill and is responsible for installation, maintenance and repair of pneumatic, electronic, mechanical and hydraulic, indicating, recording and control instruments and adjustments, repair and maintenance of mechanical refrigeration control equipment for efficient operation.

Is required to adjust and repair electrically and pneumatically operated control valves.

Responsible for the accuracy of calibrations of pneumatic and electronic instruments assigned to him/her for repair including dimensional gauging equipment, scales, etc.

Works closely with supervision to analyze trouble in plant instrumentation processes, diagnoses such problems and makes necessary corrections.

Utilizes a variety of hand tools, testing and fabrication and installation of various electronic and pneumatic circuits.

Maintains good housekeeping.

Exercises proper safety techniques.

Performs other related work as assigned.

QUALIFICATIONS:

Five years journeyman experience in an industrial plant or completion of an approved apprenticeship program in the craft.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

Job Code W38

Revision Date 07/30/92

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: LABORER

PRIMARY FUNCTION: Move furniture, mow grass, build and repair fence, also work on and repair the railroad, help in concrete work of both new jobs and repair.

TOOLS AND EQUIPMENT: mowing equipment such as (riding mowers, push type mowers, engine driven), weed eaters, chain saws, ditch diggers, furniture moving items, carts both 2 and 4 wheel type.

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Performs duties of a relatively unskilled nature or follows a predetermined schedule as required.
Clean equipment, windows or floors; and perform other general housekeeping duties (Optional).
Load and unload trucks and other conveyances, to run errands, stack, move or store material, equipment, or supplies.
Assigned to work-saving devices not requiring particular skill and training.
Performs other general duties as assigned.

Tools and Equipment: mowing equipment such as (riding mowers, push type mowers engine driven, weed eaters, chain saws, ditch diggers, furniture moving items, carts both 2 and 4 wheel type

QUALIFICATIONS:

High school graduate or equivalent.
Related experience helpful but not required.

• - NONESSENTIAL FUNCTION
(OPTIONAL) - OPTIONAL DEPENDING ON THE DEPARTMENT.

PREPARED BY: DATE

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE
M A Thomas	9/92			R J Sullivan	9/8/9

000584

Job Code W39

329

Revision Date 07/30/92

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: LAUNDRY WORKER

PRIMARY FUNCTION: To gather and launder, fold, repair and issue company issued clothing

TOOLS AND EQUIPMENT: floor scrubbers, computerized keyboard, broom, mop, washing machine, dryer, laundry carts, clothing racks, vacuum sweepers and respiratory.

MATERIAL: laundry soap, bleach, brighteners, softeners, floor soap, general purpose cleaners.

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Operates laundry equipment such as washers, drying tumblers, extractor and hoist, to wash and dry soiled protective clothing, towels, etc.
Follows predetermined procedures and charts in loading and unloading equipment, determining temperature and water level, and in mixing detergents.
Sorts and/or folds clothing and place in lockers.
Operates mending machine. Stencils and marks sizes on clothing.
Issues clothing, shoes and other required items.
Gathers soiled clothing from both sides of locker room and take to laundry.
Prepares necessary reports as instructed.
Handles and dispenses supplies to and from stock and laundry rooms.
Maintains good housekeeping.
Perform other related duties as assigned.
Inventory stock room supplies.

QUALIFICATIONS:

High school graduate or equivalent.
Related experience helpful but not required.

*- Nonessential Function
(Optional) - Optional depending on the department.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE
M A Thomas	9/92			R J Sullivan	9/8/92

Job Code W46

Revision Date 04/91

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: MACHINIST

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Sets up and operates varied machining equipment such as engine lathes, turret lathes, milling machines, internal, external and surface grinders, shapers, drilling machine and other power equipment as necessary to form or shape varied materials including metals, plastics, wood and compositions.

Utilizes portable power and other hand tools of the trade to lay-out, design, fabricate, fit, assemble, dismantle, rebuild and repair such items as machine, parts, tools, fixtures, jigs, bearings, valves, shaftings and other equipment parts or components.

Is required to read and interpret blueprints, scale drawings and sketches and apply knowledge of shop mathematics, charts and tables.

Is responsible for keeping machines clean at all times and maintaining area housekeeping.

Performs other related duties as assigned.

QUALIFICATIONS:

High school graduate or equivalent with five years experience as a journeyman maintenance Machinist in an industrial complex or completion of an approved apprenticeship program in the craft.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

C40

Job Code ~~W48~~

Revision Date 04/91 Profile No._____ 329

WAGE POSITION DESCRIPTION

JOB TITLE: MASON

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Skilled in the use and maintenance of stone and stonelike materials, lays a variety of composition materials such as cinder and cement blocks, stone, ceramic, terrazzo, tile, concrete slabs and varied types of bricks.

Installs furnace refractories requiring mortar.

Lines tanks, hoppers, bins or vessels with brick.

Repairs asphalt floors and installs new sections of floor.

Performs cement finishing and stucco work. Mixes and pours special mortars such as grout.

Installs insulation and insulating paper materials.

Plasters walls with plaster preparation or mortar as required.

May assist in pouring of concrete. Inspects masonry surfaces as required.

Works from drawings, sketches, verbal or written instructions.

Utilizes varied hand tools and equipment such as concrete and mortar mixers, ladders, scaffolds, rigging, abrasive saws and chipping guns.

Maintains good housekeeping. Performs other related work as assigned.

QUALIFICATIONS:

HS graduate or equivalent

Five years journeyman experience in an industrial plant or completion of an approved apprenticeship program in the craft.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

Job Code W50

Revision Date 09/01/92

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: MILLWRIGHT

PRIMARY FUNCTION: Installing, moving, dismantling and maintenance of all types of machines and equipment.

TOOLS AND EQUIPMENT: measuring devices, rigging aids , a variety of hand tools, welding machines and possibly a cutting torch.

MATERIAL: Gaskets, variety of metals, black iron, stainless steel, aluminum.

DIRECTION OF OTHERS: gives recommendations, advice, or guidance to others.

DUTIES AND RESPONSIBILITIES:

Responsible for the installation, moving, dismantling and maintenance of all types of machines and equipment.
May be required to exercise extreme accuracy in aligning and balancing (Optional).
Installs motors and motor generator sets. Installs and repairs a wide variety of equipment such as elevators, conveyors, hoists, blowers, power transmissions, etc.

Installs and repairs factory machinery, and renews or repairs parts such as bushings, bearings, levers, pulleys, drives etc. Checks operations when installed.
Lays-out and fabricates structural steel and plate.
Fabricates and repairs metal items such as platforms and stairs, tanks, hoppers, bins, etc.

Works from drawings, sketches, verbal and written instructions.
Inspects equipment, prepares reports as needed, and are responsible for time cards.
Utilizes a variety of hand tools, measuring devices.
Crimps, punch, bend, rivet, form, shape, fit, solder and electric arc weld with processes, varied sheet metal work.
Utilize oxygen- acetylene burning and/ or plasma arc cutting equipment to size reduce or install and dismantle equipment.
Exercises proper safety methods and techniques.
Maintains good housekeeping.
Performs other related work as assigned.

QUALIFICATIONS:
High graduate or equivalent.
Five years journeyman experience in an industrial plant or completion of an approved apprenticeship program in the craft.

• - Nonessential Function
(Optional) - Optional depending on the department.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE
M A Thomas	9/92			R J Sullivan	9/8/9

000588

Job Code W51

Revision Date 04/91 Profile No._____

329

WAGE POSITION DESCRIPTION

JOB TITLE: MOTOR VEHICLE OPERATOR

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Operates a variety of gasoline or diesel-powered motor vehicles such as passenger cars, dump trucks, street sweeper, straight, tractor-trailer and tank trucks.

May be required to make over-the-road or long distance trips.

Manipulates various levers, buttons, switches and other operational controls such as gear shifts, hoists or hand valves, demster-dumpster units and air valves.

May assist in manually loading and unloading trucks.

May make minor adjustments or repairs to equipment such as changing tires, etc., when necessary.

Is responsible for checking equipment to assure proper operation and advises supervision of any malfunctions of equipment or need for maintenance or repair.

Keeps necessary log or other records as required.

Is responsible for safe operation of vehicle, observing traffic laws, state, local, or DOE regulations, and other pertinent restrictions.

May be required to train other personnel.

Perform duties such as cleaning windshield, cab, truck bed, etc., or performs other housekeeping duties as instructed. Performs other related duties as assigned.

QUALIFICATIONS:

High school graduate or equivalent. Valid driver's license and two years applicable experience.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

Job Code W52

Revision Date 04/91

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: OILER

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Lubricates, with oil or grease, the moving parts and wearing surfaces of mechanical and electrical equipment or facilities.

Fills oil cans, grease guns or other containers with proper lubricants.

Oils or greases bearings, drive chains, guides, etc. Drains, cleans, and refills oil cups, reservoirs or systems.

Adjusts feed of oil from oil cups or reservoirs. Packs grease cups.

Keeps sumps or wells for lubricating systems filled with oil or grease.

Responsible for using specified lubricants on specified equipment, as per schedule.

Cleans machines and equipment.

Checks and reports to supervisor conditions such as leaks in lubricating system, etc.

Maintains lubrication cards and log of activity.

Maintains good housekeeping. Performs other related duties as assigned.

QUALIFICATIONS:

High school graduate or equivalent with a mechanical aptitude and a minimum of two years oiler or millwright/machine repair experience or equivalent. Must be familiar with lubricants and lubrication products and their use and application.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

Job Code W54

Revision Date 04/91 Profile No._____ 329

WAGE POSITION DESCRIPTION

JOB TITLE: PAINTER

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Applies paints, enamels, stains, and other paint-like coating and protective materials to walls, woodwork, buildings, trim fixtures and equipment.

Mixes colors, oils, lead and other paint ingredients to obtain required color or consistency.

Prepares surface for painting. Applies paint with spray gun, roller or brush.

Is familiar with the hazards of certain inflammable and toxic paints, lacquers and thinners, and exercises care in their use and storage.

Requires knowledge of surface peculiarities and types of paint required for different applications.

Installs new glass and plexiglass in windows, compartments or partitions. Removes old glass and cleans channels; cuts glass.

Prints and paints signs and required symbols. Refinishes, waxes and polishes coated surfaces on repair work.

Required to work from scaffolds, ladders, boatswains chairs, roof tops, etc.

Erects painting scaffolds, ladders, etc.

Maintains good housekeeping. Performs other related work as assigned.

QUALIFICATIONS:

Five years experience in use of industrial paint products and techniques.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

Job Code W55

Revision Date 04/91 Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: PIPEFITTER

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Lays out, installs and maintains piping systems such as steam, gas, air, water and hydraulic lines, etc.

Prepares, fits, cuts, bends, threads and fabricates varied sizes of pipes.

Installs, or replaces pipe line, heating units, orifices, valves, diaphragms, sanitary facilities, etc.

Insulates pipe lines, furnaces, flues, housing and other objects as required.

Maintains roof drain pipes and air line pipings, and pipings in connection with water treatment, sanitary sewage and condensate return systems.

Installs, inspects and repairs steam traps, screens, and drip pockets, etc.

Performs hydrostatic tests, cleans utility lines and tubing, caulks pipe joints and makes gaskets as necessary.

Works from drawings, sketches, verbal and written instructions.

Exercises proper safety methods and techniques.

Utilizes a variety of hand tools and equipment such as pipe machines, grinders, presses, shears, rollers, scaffolds, ladders, and rigging equipment.

Maintains good housekeeping. Performs other related work as assigned.

QUALIFICATIONS:

HS graduate or equivalent

Five years journeyman experience in an industrial plant or completion of an approved apprenticeship program in the craft.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.
000592				

Job Code W56

Revision Date 07/92 Profile No._____ 329

WAGE POSITION DESCRIPTION

JOB TITLE: PORTER

PRIMARY FUNCTION: The purpose involves the general cleaning of company rest rooms and offices, trash removal, sweeping and moping of floors and minor lifting as necessary.

TOOLS AND EQUIPMENT: mops, mop bucket, brooms, toilet bowl brush, porter cart, vacuum cleaner, stripper anc buffer, buffing machine, stripping machine, floor scrubber, extractor machine, carpet.

MATERIAL: non-acid bathroom cleaner, non-acid window cleaner, floor stripper, wax finisher, stainless steel cleaner

DIRECTION OF OTHERS: none

DUTIES AND RESPONSIBILITIES:

Using all types of cleaning equipment and compounds, performs duties involved in cleaning company offices and res rooms as instructed by Supervisor.
Cleans and fills dispensers such as paper toweling, kimwipe, soaps, toilet tissue, etc.
Sweeps floors and disposes of dust and other litter.
Empty containers such as ash trays, waste baskets, trash containers, smoking urns, etc.
Mops, scrubs and waxes floors, washes limited portions of painted walls such as smudges, hand prints, etc., washes doors, tile walls, and partitions and cleans drinking fountains.
Cleans and disinfects wash rooms and washroom facilities.
Operates labor-saving devices such as vacuum and buffing machines, etc.
Maintains good housekeeping.
Clean venetian blinds.
Cleans and polishes furniture and other items as directed.
Arranges facilities for meeting, conferences etc. as instructed.
May be required to run errands or carry office machines equipment , materials or other miscellaneous items from one location to another as directed by supervisor (Optional).
Performs other related duties as assigned.

QUALIFICATIONS:
High school graduate or equivalent.
Prefer one year housekeeping or general porter work.

• - Nonessential Function
(Optional) - Optional depending on the department.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE
M A Thomas	9/92			R J Sullivan	9/8/9

Job Code W52

Revision Date 04/91

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: POWER PLANT OILER

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

QUALIFICATIONS:

Should have experience in utilities plant. Should have a mechanical ability and be able to follow lubrication schedules. A knowledge of frontend loader operation would also be helpful.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

000594

Job Code W57

329

Revision Date 04/91

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: PUMP OPERATOR

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Checks operations of pumps, and makes routine inspection of the water and waste treatment systems, preparing reports and adjusting equipment within predetermined limits.

Alternates pumps when necessary.

Performs control tests on water and sewage as instructed.

Obtains and prepares samples from sanitary and waste systems.

Performs routine assignments within waste treatment area proper such as regenerating, backwashing, decanting, measuring of chemicals, etc.

Cleans, interior of systems. May operate the incinerator.

Reports unusual and unsafe conditions to Water Plant Operator or Assistant Water Plant Operator.

Assists in preparation of log sheets, and reports on instrumentation controls and charts.

Assists Water Plant Operator in instruction of Assistant Pump Operator.

Handles materials such as bags of lime and cylinders of chlorine, acid, etc.

Maintains good housekeeping. Performs other related duties as assigned.

QUALIFICATIONS:

Requires a minimum of one year experience in the Water Treatment, Sewage Treatment and/or Waste Disposal field. Knowledge of chemistry desirable.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

288

Job Code W36

Revision Date 04/91

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: ~~INSPECTOR~~ QA Checker

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Performs a variety of physical and visual tests.

Inspects material for physical dimensions such as length, diameter, contour and radius specification.

Inspects for metal quality defects including surface seams, nicks, mars, etc.

Notifies appropriate personnel when material fails to meet specifications.

Follows drawings, specifications and instructions to comply with inspection requirements.

Inspects material utilizing manual or automatic measuring devices such as pneumatic, dial indicator, surface roughness, projectors, profilometer, and hardness testers.

Responsible for checking gauges, instruments, equipment and other measuring devices to conform within specified limits and makes minor adjustments.

Prepares proper forms and checks material against accompanying batch-card or other records and maintains records such as scrap logs and control charts.

Transfers or moves material into containers or material handling equipment as instructed.

Maintains area housekeeping and performs other related duties as assigned.

QUALIFICATIONS:

One year experience as in inspector in a machine shop environment.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

Revision Date 12/95 Job Code W60

Wage Position Description

JOB TITLE: RIGGER

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Responsible for raising, lowering or otherwise handling heavy or difficult to handle equipment such as large pumps, compressors, tanks, motors, factory machinery.

Responsible for critical lifts and rigging for mobile cranes as defined in the DOE Hoist/ Rigging Manual.

Lighter loads and straight-lift loads requiring simple rigging handled by individual crafts.

Operates crabs, winches, and drum hoists.

Makes up special chokers, bridles, and other lifting rigs.

Requires knowledge of saftey capacity in working loads, cables, line, timber, beams, etc.

Works from drawings, sketches and verbal or written instructions.

Utilizes a variety of hand tools and rigging equipment such as blocks, tackles, jacks, rollers, anchors, chains, boatswains, chairs, etc.

Maintains good housekeeping skills. Performs other related duties as assigned.

QUALIFICATIONS:

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MANAGER	DATE	T/C IND. REL.	DATE

Job Code W67

Revision Date 04/91

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: STATIONARY ENGINEER

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Responsible for continuous, efficient operation of Power Plant.

Operates and maintains mechanical equipment supplying steam, plant air and instrument air to entire plant.

Starts and stops motors and turbines by pushing start and stop buttons and manipulating steam, water and air valves.

Observes meters, gauges, combustion controls, regulating valves, etc., to determine efficient operating condition of equipment.

Inspects and makes minor adjustments to operating and stationary equipment for faulty operations such as coal elevators, ash conveyors, pumps, turbines, valves, traps, packing glands, flanges, etc.

Writes minor work requests for maintenance work on equipment and follows up necessary repairs.

Checks log sheets and figures evaporation of boiler units.

May run water analyses on boiler and feed water to determine hardness, alkalinity, sulphite, etc.

Directs work of other Power Plant employees.

Maintains good housekeeping. Performs other related duties as assigned.

QUALIFICATIONS:

Requires minimum of five years experience in the following fields: operation of high pressure boilers, operation of steam turbines and electrostatic precipitators. Must possess Ohio State issued Stationary Engineer's license.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.

Job Code W75

Revision Date 04/91 Profile No._____ 329

WAGE POSITION DESCRIPTION

JOB TITLE: STOREROOM ATTENDANT

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Receives and checks material against receiving report and stores catalogue in order to verify quantity, description and stock number of material.

Places material into proper storage bin or area affixing necessary markings.

Is required to maintain assigned records such as catalogue cards, inventory lists, check sheets, etc.

Issues material from various stockrooms or warehouses on the basis of an approved requisition.

May assist in selecting proper items to fill requisition.

Prepares requisition to storekeeper and returned stores credit memo forms when required.

Takes physical inventory completing necessary records.

Loads, unloads, stacks and moves material manually or utilizing work saving devices.

Determines placement of material in warehouse or stockroom making adjustments when necessary.

Is responsible for safe handling of all material.

Performs housekeeping duties as required. Performs other related duties as assigned.

QUALIFICATIONS:

High school education or equivalent. Three years applicable experience, legible handwriting and good color recognition.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

Job Code W80

Revision Date 04/91

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: WASTE WATER PLANT OPERATOR

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

QUALIFICATIONS:

Requires a minimum of five years experience in the Water/Wastewater Treatment field. Must possess at least a Class I license in Wastewater Works and a Class I license in Water Works, issued by the State of Ohio.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	D
000600					

Job Code W76

329

Revision Date 04/91

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: WATER PLANT OPERATOR

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Responsible for continuous, efficient and safe operations of the water and sewage plants and systems.

Operates, inspects, controls, and maintains the quantity, quality, distribution and disposal of water and waste in the water plant, zeolite softener, cooling tower, deionizing feed, and the storm and sanitary systems.

Responsible for operation of incinerator.

Obtains samples and maintains control of plants and systems through chemical and biological tests.

Directs work of other Water and Sewage Plant employees, training and instructing as necessary.

Responsible for notifying supervision of spills in affected area, and may assist in removal of spills.

Must possess state issued Water and Sewage Plants Operator's license.

Maintains and reviews log sheets. Requests maintenance and repair of equipment and allows necessary repairs.

Makes minor adjustments for protection of equipment and continuity of operation.

Maintains good housekeeping. Performs other related duties as assigned.

QUALIFICATIONS:

Requires a minimum of five years experience in the Water/Wastewater Treatment field. Must possess at least a Class I license in Wastewater Works and a Class I license in Water Works, issued by the State of Ohio.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE

Job Code W78

Revision Date 04/91

Profile No._____

WAGE POSITION DESCRIPTION

JOB TITLE: WELDER

PRIMARY FUNCTION:

TOOLS AND EQUIPMENT:

MATERIAL:

DIRECTION OF OTHERS:

DUTIES AND RESPONSIBILITIES:

Performs acetylene, arc welding and other types of welding on a variety of metals and alloys in construction or maintenance and repair work.

Requires a good knowledge of the welding properties of varied metals and alloys, and a good knowledge of welding equipment and its operation to obtain proper penetration, fusion and maximum strength.

Unites dissimilar metals of a wide difference in size and metallurgical properties.

Welds structural shapes, piping, boiler plate, tanks, etc.

Utilizes acetylene process to silver solder or soft solder.

Sets up welding equipment and adjusts to correct pressures or current.

Use preheating torch for bending or annealing and for hardening tempering tools.

Obtains gas cylinders from storage rack and connects regulators.

Selects proper metal rod for job and prepares work to achieve proper weld.

Maintains good housekeeping. Performs other related work as assigned.

QUALIFICATIONS:

Five years journeyman experience in an industrial plant or completion of an approved apprenticeship program in the craft.

PREPARED BY: DATE:

APPROVALS

T/C ANALYST	DATE	DEPT. MGR.	DATE	T/C HUMAN RESOURCES MGR.	DATE
000602					

Attachment J.4.13
Project Labor Agreement Letter of Assent (3/30/93)

LETTER OF ASSENT TO THE PROJECT LABOR AGREEMENT (PLA) FOR THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (FEMP)

Fernald, Ohio

Pursuant to Article VII of the Fernald Environmental Management Project (FEMP), Project Labor Agreement, the undersigned party hereby agrees that it will comply with and be bound by all of the terms and conditions of the FEMP Project Labor Agreement, including Appendix A, agrees to all approved amendments or revisions thereto, and the decisions of the Labor-Management Cooperative Committee (LMCC) for all work performed on the defined Project site.

This Letter of Assent shall apply ONLY to the above referenced Project site and will remain in effect for the duration of the above referenced Project, after which this understanding will automatically terminate without further notice.

FOR THE EMPLOYER: (Subcontractor(s) of whatever tier)

Name of Employer: _____

_____

Name and Signature of
Authorized Person: (Print) _____

(Title) _____

(Signature) _____

Telephone No.: ( ) _____

Date: _____

Attachment J.4.14

Agreement to Subcontract Terms and Conditions/General Provisions

Fernald Environmental
FERMCO
Restoration Management Corporation

AGREEMENT TO SUBCONTRACT
TERMS AND CONDITIONS/GENERAL PROVISIONS

☐ No exceptions are taken to any of the subcontract terms and

conditions contained in Sections A through I of Request for Proposal F96P157987.
(RFP Number)

☐ Exceptions are taken to the subcontract terms and conditions contained in Sections A through I of Request for Proposal F96P157987.
(RFP Number)
All exceptions are attached and the nature of the exceptions are specifically defined.

_____ _____
(Signature) (Date)

_____
(Company)

Attachment J.4.15
Bid Bond, Form No. FS-F-678 (6/15/93)

Fernald Environmental Restoration Management Corporation

BID BOND

(See instructions on reverse)

DATE BOND EXECUTED *(Must NOT be later than bid opening date)*:

PRINCIPAL *(Legal Name and Business Address)*:

TYPE OF ORGANIZATION *(check one)*:

☐ Individual ☐ Partnership
☐ Joint Venture ☐ Corporation

STATE OF INCORPORATION:

SURETY(IES) *(Name and Business Address)*:

PENAL SUM OF BOND					BID IDENTIFICATION	
PERCENT OF BID PRICE	AMOUNT NOT TO EXCEED				BID DATE:	INVITATION NUMBER:
	MILLION(S)	THOUSAND(S)	HUNDRED(S)	CENT(S)	FOR CONSTRUCTION, SUPPLIES, OR SERVICES	

OBLIGATION: We, the Principal and Surety(ies) are firmly bound to the United States of America (hereinafter called the Government), and FERMCO (hereinafter called the Company) in the above penal sum. For payment of the penal sum, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally. However, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us. For all other purposes, each Surety binds itself, jointly and severally with the Principal, for the payment of the sum shown opposite the name of the Surety. If no limit of liability is indicated, the limit of liability is the full amount of the penal sum.

CONDITIONS: The Principal has submitted the bid identified above.

THEREFORE: The above obligation is void if the Principal - (a) upon acceptance by the Government and the Company of the bid identified above, within the period specified therein for acceptance (sixty (60) days if no period is specified), executes the further contractual documents and gives the bond(s) required by the terms of the bid as accepted within the time specified (ten (10) days if no period is specified) after receipt of the forms by the principal; or (b) in the event of failure so to execute such further contractual documents and give such bonds, pays the Government and the Company for any cost of procuring the work which exceeds the amount of the bid.

Each Surety executing this instrument agrees that its obligation is not impaired by an extension(s) of the time for acceptance of the bid that the Principal may grant to the Government or the Company. Notice to the surety(ies) of extension(s) are waived. However, waiver of the notice applies only to extensions aggregating not more than sixty (60) calendar days in addition to the period originally allowed for acceptance of the bid.

WITNESS: The Principal and Surety(ies) executed this bid bond, as modified for the Government and the Company, and affixed their seals on the above date.

PRINCIPAL

SIGNATURE(S)	1. (SEAL)	2. (SEAL)	CORPORATE SEAL
NAME(S) & TITLE(S) (TYPED)	1.	2.	

INDIVIDUAL SURETY(IES)

SIGNATURE(S)	1. (SEAL)	2. (SEAL)
NAME(S) (TYPED)	1.	2.

CORPORATE SURETY(IES)

SURETY A				
NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
SIGNATURE(S)	1.	2.		
NAME(S) & TITLE(S) (TYPED)	1.	2.		

000608

FS-F-678 (6/15/93)

CORPORATE SURETY(IES) *(Continued)*

SURETY B	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		
SURETY C	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		
SURETY D	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		
SURETY E	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1	2.		
SURETY F	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		
SURETY G	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1	2.		
	NAME(S) & TITLE(S) (TYPED)	1	2.		

INSTRUCTIONS

1. This form is authorized for use when a bid guaranty is required. Any deviation from this form will require the written approval of the Administrator of General Services.

2. Insert the full legal name and business address of the Principal in the space designated "Principal" on the face of the form. An authorized person shall sign the bond. Any person signing in a representative capacity (e.g., an attorney-in-fact) must furnish evidence of authority if that representative is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved.

3. The bond may express penal sum as a percentage of the bid price. In these cases, the bond may state a maximum dollar limitation (e.g., 20% of the bid price but the amount not to exceed _____ dollars).

4.(a) Corporations executing the bond as sureties must appear on the Department of the Treasury's list of approved sureties and must act within the limitation listed therein. Where more than one corporate surety is involved, their names and addresses shall appear in the spaces (Surety A, Surety B, etc.) headed "CORPORATE SURETY(IES)." In the space designated "SURETY(IES)" on the face of the form, insert only the letter identification of the sureties.

(b) Where individual sureties are involved, two or more responsible persons shall execute the bond. A completed Affidavit of Individual Surety (Standard Form 28), for each individual surety, shall accompany the bond. The government and/or the Company may require these sureties to furnish additional substantiating information concerning their financial capability.

5. Corporations executing the bond shall affix their corporate seals. Individu[illegible]ll execute the bond opposite the word "Corporate Seal"; and shall affix an adhes[illegible]f executed in Maine, New Hampshire, or any other jurisdiction requiring adhesiv[illegible].

6. Type the name and title of each person signing this bond in the space provided.

7. In its application to negotiated contracts, the terms "bid" and "bidder" shall include "proposal" and "offeror."

Attachment J.4.16

Payment Bond, Form No. FS-F-797 (6/15/93) (Needed for Award)

Fernald Environmental Restoration Management Corporation

PAYMENT BOND

(See instructions on reverse)

DATE BOND EXECUTED *(Must be same or later than date of contract)*:

PRINCIPAL *(Legal Name and Business Address)*:

TYPE OF ORGANIZATION *(check one)*:

☐ Individual ☐ Partnership
☐ Joint Venture ☐ Corporation

STATE OF INCORPORATION:

SURETY(IES) *(Name and Business Address)*:

PENAL SUM OF BOND

MILLION(S)	THOUSAND(S)	HUNDRED(S)	CENT(S)

CONTRACT DATE: CONTRACT NUMBER:

OBLIGATION:

We, the Principal and Surety(ies) are firmly bound to the United States of America (hereinafter called the Government), and FERMCO (hereinafter called the Company) in the above penal sum. For payment of the penal sum, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally. However, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us. For all other purposes, each Surety binds itself, jointly and severally with the Principal, for the payment of the sum shown opposite the name of the Surety. If no limit of liability is indicated, the limit of liability is the full amount of the penal sum.

CONDITIONS:

The above obligation is void if the Principal promptly makes payment to all persons having a direct relationship with the Principal or subcontractor of the Principal for furnishing labor, material or both in the prosecution of the work provided for in the contract identified above, and any authorized modifications of the contract that subsequently are made. Notice of those modifications to the Surety(ies) are waived.

WITNESS:

The Principal and Surety(ies) executed this payment bond, as modified for the Government and the Company, and affixed their seals on the above date.

PRINCIPAL

SIGNATURE(S)	1. (SEAL)	2. (SEAL)	CORPORATE SEAL
NAME(S) & TITLE(S) (TYPED)	1.	2.	

INDIVIDUAL SURETY(IES)

SIGNATURE(S)	1. (SEAL)	2. (SEAL)
NAME(S) (TYPED)	1.	2.

CORPORATE SURETY(IES)

SURETY A	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		
SURETY B	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		

FS-F-797 (6/15/93)

CORPORATE SURETY(IES) *(Continued)*

SURETY C	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		
SURETY D	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		
SURETY E	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		
SURETY F	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		
SURETY G	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		

INSTRUCTIONS

1. This form, for the protection of persons supplying labor and material, is used when a payment bond is required under the Act of August 24, 1935, 49 Stat. 793 (40 U.S.C. 270a-270e). Any deviation from this form will require the written approval of the Administrator of General Services.

2. Insert the full legal name and business address of the Principal in the space designated "Principal" on the face of the form. An authorized person shall sign the bond. Any person signing in a representative capacity (e.g., an attorney-in-fact) must furnish evidence of authority if that representative is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved.

3.(a) Corporations executing the bond as sureties must appear on the Department of the Treasury's list of approved sureties and must act within the limitation listed therein. Where more than one corporate surety is involved, their names and addresses shall appear in the spaces (Surety A, Surety B, etc.) headed "CORPORATE SURETY(IES)." In the space designated "SURETY(IES)" on the face of the form, insert only the letter identification of the sureties.

(b) Where individual sureties are involved, two or more responsible persons shall execute the bond. A completed Affidavit of Individual Surety (Standard Form 28), for each individual surety, shall accompany the bond. The government and/or the Company may require these sureties to furnish additional substantiating information concerning their financial capability.

4. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Corporate Seal"; and shall affix an adhesive seal if executed in Maine, New Hampshire, or any other jurisdiction regarding adhesive seals.

5. Type the name and title of each person signing this bond in the space provided.

000612

Attachment J.4.17

Performance Bond, Form No. FS-F-796 (6/15/93) (Needed for Award)

Fernald Environmental Restoration Management Corporation

PERFORMANCE BOND

(See instructions on reverse)

DATE BOND EXECUTED *(Must be same or later than date of contract)*:

PRINCIPAL *(Legal Name and Business Address)*:

TYPE OF ORGANIZATION *(check one)*:

☐ Individual ☐ Partnership
☐ Joint Venture ☐ Corporation

STATE OF INCORPORATION:

SURETY(IES) *(Name and Business Address)*:

PENAL SUM OF BOND

MILLION(S)	THOUSAND(S)	HUNDRED(S)	CENT(S)

CONTRACT DATE:	CONTRACT NUMBER:

OBLIGATION: We, the Principal and Surety(ies) are firmly bound to the United States of America (hereinafter called the Government), and FERMCO (hereinafter called the Company) in the above penal sum. For payment of the penal sum, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally. However, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us. For all other purposes, each Surety binds itself, jointly and severally with the Principal, for the payment of the sum shown opposite the name of the Surety. If no limit of liability is indicated, the limit of liability is the full amount of the penal sum.

CONDITIONS: The Principal has entered into the contract identified above.

THEREFORE: The above obligation is void if the Principal;

(a)(1) Performs and fulfills all the undertakings, covenants, terms, conditions, and agreements of the contract during the original term of the contract and any extensions thereof that are granted by the Government and the Company, with or without notice to the Surety(ies), and during the life of any guaranty required under the contract, and (2) perform and fulfills all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of the contract that hereafter are made. Notice of those modifications to the Surety(ies) are waived.

(b) Pays to the Government the full amount of the taxes imposed by the Government, if the said contract is subject to the Miller Act, (40 U.S.C. 270a-270e), which are collected, deducted, or withheld from wages paid by the Principal in carrying out the construction contract with respect to which this bond is furnished.

WITNESS: The Principal and Surety(ies) executed in this performance bond, as modified for the Government and the Company, and affixed their seals on the above date.

PRINCIPAL

SIGNATURE(S)	1. (SEAL)	2. (SEAL)	CORPORATE SEAL
NAME(S) & TITLE(S) (TYPED)	1.	2.	

INDIVIDUAL SURETY(IES)

SIGNATURE(S)	1. (SEAL)	2. (SEAL)
NAME(S) (TYPED)	1.	2.

CORPORATE SURETY(IES)

SURETY A	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		
SURETY B	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		

FS-F-796 (6/15/93)

CORPORATE SURETY(IES) *(Continued)*

SURETY C	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		
SURETY D	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		
SURETY E	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		
SURETY F	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		
SURETY G	NAME & ADDRESS		STATE OF INC.:	LIABILITY LIMIT:	CORPORATE SEAL
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (TYPED)	1.	2.		

BOND PREMIUM ▶	RATE PER THOUSAND: $	TOTAL: $

INSTRUCTIONS

1. This form is authorized for use in connection with Government contracts. Any deviation from this form will require the written approval of the Administrator of General Services.

2. Insert the full legal name and business address of the Principal in the space designated "Principal" on the face of the form. An authorized person shall sign the bond. Any person signing in a representative capacity (e.g., an attorney-in-fact) must furnish evidence of authority if that representative is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved.

3.(a) Corporations executing the bond as sureties must appear on the Department of the Treasury's list of approved sureties and must act within the limitation listed therein. Where more than one corporate surety is involved, their names and addresses shall appear in the spaces (Surety A, Surety B, etc.) headed "CORPORATE SURETY(IES)." In the space designated "SURETY(IES)" on the face of the form, insert only the letter identification of the sureties.

(b) Where individual sureties are involved, two or more responsible persons shall execute the bond. A completed Affidavit of Individual Surety (Standard Form 28), for each individual surety, shall accompany the bond. The government and/or the Company may require these sureties to furnish additional substantiating information concerning their financial capability.

4. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Corporate Seal"; and shall affix an adhesive seal if executed in Maine, New Hampshire, or any other jurisdiction requiring adhesive seals.

5. Type the name and title of each person signing this bond in the space provided.

Attachment J.4.18

General Shipping Instructions, Rev. 7, Dated 3/12/96, Page Numbers 1-3

Fernald Environmental
FERMCO
Restoration Management Corporation

GENERAL SHIPPING INSTRUCTIONS

GENERAL

The transportation instructions and requirements contained herein apply to all purchase orders/subcontracts unless otherwise indicated in the body of the purchase order/subcontract or in a specific change notice. All transportation expenditures are subject to Government audit (Ref: 41 C.F.R 101-141). *If failure to comply with these instructions or any other shipping instructions contained in the purchase order/subcontract results in additional freight costs to FERMCO. the purchase order/subcontract price will be reduced by that amount. plus a $25.00 administrative charge.* If there are any questions or additional information required, call the responsible FERMCO Buyer.

WARNING: **It is a Federal offense to violate packaging and shipping regulations for hazardous materials and substances. Shippers must comply with all Federal, State and Local laws and regulations pertaining to transportation.**

REQUIREMENTS (BILLS OF LADING, INVOICES, PACKAGES AND DRIVERS)

1. Ship "collect" on f.o.b. terms unless directed otherwise by the purchase order/subcontract (exceptions include Vendor Truck, etc.). Do not use c.o.d. service. The following statement must be on the bill of lading if the transportation charges are to be paid by FERMCO:

   "Transportation hereunder is for the U.S. Government, Department of Energy (DOE), and the actual total transportation charges paid to the carrier(s) by the consignor or consignee are to be reimbursed by the Government, pursuant to according to cost-reimbursable contract number DE-AC24-92OR21972 under the provisions of section 10721 of the Revised Interstate Commerce Act (49 U.S.C. 10721). This may be confirmed by contacting the DOE representative at (513) 648-3138."

2. When not shipping "collect" on f.o.b. origin shipments, invoices which include transportation charges shall be accompanied by copies of the paid transportation bill regardless of dollar value of the transportation costs. The maximum amount FERMCO will pay is the same amount as if the package(s) was shipped "collect." Billings which include transportation charges associated with the Seller utilizing its own vehicle shall be substantiated by a separate transportation invoice itemizing the basis for the charge.

3. All f.o.b. destination shipments must be "prepaid."

4. All shipping documents must show the appropriate Tender Number. The Seller shall describe freight on shipping papers per the applicable carrier classification. Consolidate on one (1) bill of lading two or more

shipments that are being consigned to FERMCO on the same day.

5. All packages and shipping documents must be clearly marked with the name of the recipient and the applicable FERMCO purchase order/subcontract number.

6. FERMCO receiving hours are Monday - Friday, 7:30 a.m. to 2:30 p.m. unless specified otherwise in the purchase order/subcontract. Call 513-648-5021, Receiving, to answer any questions. The delivering driver must have proof of U.S. citizenship (only if going into controlled area).

7. Unless otherwise directed by the FERMCO Buyer, the Seller shall send a copy of the bill of lading to the FERMCO Buyer's Traffic Office for all shipments of: (a) classified materials, (b) protected sensitive and protected controlled materials, (c) explosives and poisons, classes A and B, (d) radioactive materials requiring the use of Yellow III labels, (e) truckload/carload shipments of supplies weighing 20,000 pounds or more, (f) shipments that occupy the full visible capacity of a railway car or motor vehicle, and (g) shipments that will require significant material handling support personnel or equipment, i.e., crane, forklift, etc.

   Fax a copy of the bill of lading with the estimated time of arrival to the FERMCO Traffic Office. Facsimile Number (513) 648-5002.

VALUE AND INSURANCE

The Department of Energy and FERMCO will NOT pay for insurance against loss, damage, or destruction. On "f.o.b. destination - prepaid and charge" shipments, the Seller may elect to protect itself against loss; however, "the cost of such insurance **WILL NOT be reimbursed**". When FERMCO will bear the cost of transportation and when the applicable rate is dependent upon released value, shipment should be released at the MAXIMUM VALUE at the LOWEST RATE.

METHOD OF TRANSPORTATION

It shall be the Seller's responsibility to ship material and equipment in accordance with the following instructions unless otherwise directed on the purchase order/subcontract:

A. <u>Standard Routing</u>

The Seller shall ship routine deliveries where transportation charges are to be paid by FERMCO in the following manner unless otherwise specified in the purchase order/subcontract:

NOTE: All bills of lading shall identify the applicable tender number for the motor carrier being utilized.

Fernald Environmental
FERMCO
Restoration Management Corporation

SHIPMENTS WEIGHING	SHIP VIA
1 - 100 lbs. (Per Package)	UPS Ground, Collect - Combine multiple smaller boxes on same purchase order/contract into one shipment. Verification of weight and shipping point such as UPS pick-up report, to be attached to invoice. UPS Account #484-233
100-10,000 lbs. (LTL)	Use the motor carrier from the following list only that serves your shipping point: Preston Trucking Company, Inc. (Tender No. 1014) Overnight Transportation Co. (Tender No. 1762) Yellow Freight Co., Inc. (Tender No. 2598) ABF Freight Systems, Inc. (Tender No. 1560-A)
Over 10,000 lbs. (TL or Rail)	Request specific routing from the FERMCO Traffic Section at 648-5014 or 648-5018. If rail service, specify CSX as the delivering carrier.
1-100 lbs. (Per Package)	Federal Express Government - Account #1615-0490-4 IF NEXT DAY DELIVERY IS REQUESTED.
Over 100 lbs.	Federal Express - Heavy Weight Division. Account # 1615-0490-4. IF NEXT DAY DELIVERY IS REQUESTED.

B. Premium Transportation

1. Premium transportation must be approved by the appropriate AMTL before authorization by buyer.

2. The following methods are considered premium transportation and **SHALL NOT** be used without prior authorization from the FERMCO Buyer: Air Freight, Air Freight Forwarder, Express Shipments, Air Parcel Post, Exclusive Use of Vehicle, Air Ride/Padded Van, or any method other than the most economical.

3. If shipping "Collect" and/or "Premium" transportation that has been authorized by the FERMCO Buyer, it shall be the Seller's responsibility to ship material and equipment in accordance with the following instructions unless otherwise directed on the purchase order/subcontract:

AIR - NEXT DAY (FERMCO Account No. Must be Included on the Air Bill)

Attachment J.4.19

Subcontracting Plan Submitted in Accordance with Public Law 95-507

P-8000

SUBCONTRACTING PLAN SUBMITTED IN ACCORDANCE WITH PUBLIC LAW 95-507

1. CONTRACT NUMBER: _____ LENGTH OF CONTRACT: _____

2. CONTRACTOR'S NAME: _____ DOLLAR AMOUNT OF
DIVISION _____ CONTRACT: _____

3. NAME OF INDIVIDUAL COMPLETING THIS PLAN: _____
TELEPHONE NUMBER: _____

4. SUBCONTRACTING PLAN: (additional sheets and/or attachments may be used if needed)

a. Percentage goals (expressed in terms of percentages of total planned subcontracting dollars).

(1) Set forth total planned subcontracting dollars for large and small businesses, $_____.

(2) Set forth as percentages of the above amount, goals for subcontracting with:

(a) Small business concerns (excluding SB/D's) ____% (translated to dollars $_____).

(b) Small business concerns owned and controlled by socially and economically disadvantaged individuals (SB/D's) ____% (translated to dollars $_____).

(c) (a) plus (b) (total small business subcontracting goals) ____% (translated to dollars $_____).

(3) Description of principal product and service areas to be subcontracted:

(a) List and describe briefly principal products:

1.

2.

3.

4. Etc. (as needed)

(b) List and describe briefly principal services:

1.

2.

3.

4. Etc. (as needed)

14

(4) Of the products and services listed in (3) above, describe where it is planned to used (i) small business subcontractors, and (ii) small disadvantaged business subcontractors:

b. The designated individual within the employ of the contractor who will administer the subcontracting program of this contract is:

Name and Title: _____

Address: _____

Telephone Number _____

His duties are as follows:

c. Describe the effort that will be taken to assure SB and SB/D concerns owned and controlled by socially and economically disadvantaged will have an equitable opportunity to compete for subcontracts as they pertain to this procurement:

d. Submission of this subcontracting plan constitutes assurance that the contractor will include the clause entitled Utilization of Small Business Concerns and Small Business Concerns Owned and Controlled by Socially and Economically Disadvantaged Individuals in all subcontracts which offer further subcontracting opportunities and to require all subcontractors (except small business concerns) which receive subcontracts in excess of $500,000 or in the case of a contract for the construction of any public facility, $1,000,000 to adopt and comply with a plan similar to the plan agreed to by the contractor. Describe below the monitoring for compliance with such plan.

e. Submission of this plan also provides further assurance that the contractor will submit such periodic reports and cooperate in any studies or surveys as may be required by the contracting agency or the Small Business Administration in order to determine the extent of compliance of this plan.

f. I, the undersigned, is designated officer of _____
(Company Name)

do herewith assure that this concern will provide a recitation of the types of records the bidder/offeror will maintain to demonstrate procedures which have been adopted to comply with the requirements and goals set forth in this plan, including the establishment of source lists of small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals; and efforts to identify and award subcontracts to such small business concerns. The records shall include at least the following (these records may be maintained on a plant-wide or company-wide basis unless otherwise indicated):

(1) Small and disadvantaged business source list, guides and other data identifying small and small disadvantaged business vendors.

(2) Organizations contacted and disadvantaged business sources.

(3) On a contract-by-contract basis, records on all subcontract solicitations over $100,000, indicating on each solicitation (a) whether small business solicited, and if not why not; (b) whether small disadvantaged business was solicited, and if not why not; and (c) reasons for the failure of solicited small business or small disadvantaged business to receive the subcontract award.

(4) Records to support other outreach efforts:

Contacts with minority and small business trade associations,

Contacts with business development organizations,

Attendance at small and minority business procurement conferences and trade fairs.

(5) Records to support internal activities to guide and encourage buyers:

Workshops, seminars, training programs.

Monitoring activities to evaluate compliance.

(6) On a contract-by-contract basis, records to support award data submitted to the Government to include name and address of subcontractor.

_____
Signature

_____
Title

Attachment J.4.20

Temporary Services Agencies (6/27/95)

08/16/95

TEMPORARY SERVICES AGENCIES

GTS Duratek
ATTN: James Orr
8955 Guilford Road, Suite 200
Columbia, MD 21046
(410) 312-5100

PSA Inc.
ATTN: Tim Murphy
1605 E. Ayre Street
Newport, DL 19804
(302) 999-1665

EES Corporation
ATTN: Oakland Adams
1350 W. 5th Avenue, #330
Columbus, OH 43212
(614) 487-4300

Belcan Technical Services
ATTN: Arnie Johnson
11591 Goldcoast Drive
Cincinnati, OH 45249
(513) 489-4300

Enterprise Advisory Services, Inc.
ATTN: Jeffrey L. Guffey
663 Emory Valley Road
Oak Ridge, TN 37830
(615) 483-8196

Onsite Engineering & Management
ATTN: John Phillips
4501 Erskin Road
Cincinnati, OH 45242
(513) 791-2946

Advanced Systems Technology
ATTN: P. J. Braden
2121 Crystal Drive, Suite 514
Arlington, VA 22202
(703) 920-1864

MCE Technical Services
ATTN: Lisa Koski
616 The Parkway
Richland, WA 99352
(509) 943-0707

Octacom, Inc.
ATTN: Traci Lilliac
10991 Hamilton-Cleves Highway
Harrison, OH 45030
(513) 738-0002

Attachment J.4.21

Environment, Safety & Health Bulletin, DOE/EH-0266, Issue No. 92-4, 8/92

ENVIRONMENT, SAFETY & HEALTH

BULLETIN

Assistant Secretary for Environment, Safety & Health • U.S. Department of Energy • Washington, D.C. 20585

DOE/EH-0266 Issue No. 92-4 August 1992

DOE Quality Alert

Counterfeit Parts

This Bulletin provides a summary of information that has been disseminated by various organizations within the Department of Energy (DOE) to alert the DOE community that some vendors have sold substandard bolts and circuit breakers to its contractors. Such sales can be a crime. In certain cases, suppliers of these substandard parts may also be subject to the civil penalty enforcement provisions of the Price Anderson Amendments Act of 1988. DOE contractors have reported in excess of 1,000,000 suspect/counterfeit bolts and over 700 suspect/counterfeit circuit breakers to the Department.

Counterfeit/Substandard High-Strength Bolts

Counterfeit bolts have been found in military and commercial aircraft, surface ships, submarines, nuclear weapon production facilities, bridges, buildings, and the space shuttle. These bolts often do not possess the capabilities of the genuine bolts they counterfeit and can threaten the reliability of industrial and consumer products, National Security, or lives. At Congressional hearings in 1987, the Army testified that they had purchased bolts that bore the headmarks of Grade 8 high-strength bolts but that were actually inferior Grade 8.2 bolts. The International Fasteners Institute (IFI) reported finding substandard, mismarked, and/or counterfeit, high-strength Grade 8 bolts in the United States commercial marketplace. In 1988, IFI reported that counterfeit medium-strength Grade 5 bolts had also been found.

Foreign bolts dominate the American marketplace due to their price advantage, and the majority of suspect/counterfeit bolts are imported. Identifying, testing, and replacing these bolts has proven expensive and difficult, both mechanically and technically. Not finding and replacing these bolts, however, has proven fatal in some instances.

Fatalities From Substandard Bolts

A Report of the Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce of the U.S. House of Representatives entitled *The Threat from Substandard Fasteners: Is America Losing Its Grip?* dated July 1988 stated the following under the heading "Saturn Corporation, Tennessee":

> *A death has occurred, in part, because a bolt. . .broke as an iron worker was tightening it. The iron worker lost his balance and fell, missing the safety net. The bolt, manufactured in Mexico or Spain, was substandard.*

The *Los Angeles Times* printed a story under the headline "Counterfeits Now Nuts, Bolts Issue" in January 1989, which included the following:

> *Several people have died in crashes involving private planes that officials determined were caused by defective fasteners. . .the nuts, bolts and screws that hold together an aircraft. The National Transportation Safety Board's computer database indicated there were 61 aviation accidents between 1984 and 1987 caused by bad fasteners. How many of those fasteners were counterfeited is just now being investigated.*
>
> *And just last summer, three different military planes at Tinker Air Force Base in Oklahoma experienced engine failure as a result of defective bolts that may have been counterfeit. . . .*

The *Houston Post* ran a story with the headline, "Fatal Navy fire blamed on faulty bolt" on March 15, 1992, which stated the following:

A Feb. 22 fire aboard a Navy destroyer that killed two sailors and injured four was caused by a faulty bolt in the ship's engine room. . .the fire broke out aboard the steam-powered vessel after a stainless steel bolt connecting a high-pressure steam line sheared. . .a closer analysis of the bolt. . .showed it hadn't been sold to the Navy by any known domestic company, and sources speculate that it might have been a foreign-made fastener.

Fastener Quality Act

Congress has passed legislation aimed at curbing future bolt counterfeiting. The Fastener Quality Act was passed by Congress in November 1990 to impose sanctions upon those who sell untraceable fasteners or bolts. However, the Act has not been implemented. When testing laboratories and regulations are established by the Department of Commerce, the Senior Nuclear Managers Group (SNMG) will amend the guidance issued March 12, 1992.

DOE contractors have reported suspect/counterfeit bolts in several different ways. Some have weighed bolts and reported them in pounds, and others have counted the bolts and reported the actual numbers. As of June 1992, DOE contractors have reported finding in excess of 1,000,000 suspect/counterfeit bolts.

Indicators - Headmarks

There are several consensus organizations that have published standards for the properties of fasteners. One of these is the Society of Automotive Engineers (SAE). The SAE grade or alleged grade of a bolt is indicated by raised or indented radial lines on the bolt's head, as shown in Figure 1. These markings are called *headmarks*. DOE is currently concerned with two different grades of fasteners: one has three equally spaced radial lines on the head of a bolt which indicate that it should meet the specifications for a Grade 5 bolt; the other has six equally spaced radial lines which indicate a Grade 8 bolt. Letters or symbols on the head of a bolt indicate the manufacturer.

Figure 1 is a suspect/counterfeit Headmark List that was prepared by the United States Customs Service after extensive testing of many samples of bolts from around the nation. Any bolts anywhere in the DOE community that are currently in stock, in bins, or installed that are on the Customs Headmark List should be considered suspect/counterfeit. The headmarks on this list are those of manufacturers that have often been found to have sold bolts that did not meet the indicated consensus standards. Sufficient testing has been done on the bolts on this list to presume them defective without further testing.

Posters and Headmarks

Figure 1 may be removed and photocopied as needed for use as a poster and handy reference to known suspect fastener headmarks. Bolts with the headmarkings shown have a significant likelihood of being found to be inferior to standards. Generally, the cost of replacement of these bolts is *less* than the cost of chemical, hardness, and tensile strength testing. Note also that counterfeit bolts can be delivered with counterfeit certificates—documentation alone is insufficient to demonstrate compliance with standards.

The Fastener Quality Act of 1990 will require the registration of the headmarks of manufacturers, and *it also will require everyone in the distribution chain to ensure bolt traceability.*

Current Activities

SNMG took action in December 1990 to disseminate information for substandard material to field activities. Subsequently, the group developed a plan of action with two purposes, viz., (1) to determine the scope of the problem and to take immediate corrective actions as appropriate, and (2) to provide guidelines for strengthening the procurement process so as to preclude the acceptance of counterfeit parts in the future.

Consistent with SNMG guidance, each site should:

1. Continue inspection of inventories and systems for suspect/counterfeit parts,
2. Continue review and revise procurement and quality assurance procedures so that the problem does not recur, and
3. Continue to detect any new attempts by unscrupulous vendors to supply substandard parts.

Precautions

The following precautions should be recognized when addressing the issue of suspect/counterfeit parts:

1. ***Selective Testing***—Some facilities perform selective testing of sample bolts rather than have an independent testing laboratory run all the tests required by consensus standards. In many cases, a new counterfeit bolt has roughly the same physical strength as the graded bolt it mimics, but does not have either the chemical composition or the heat treatment specified by the consensus standards. As a result, it will stretch, exhibit metal fatigue, or corrode under less harsh service than the genuine bolt. Simple tensile strength tests cannot be used to identify substandard high-strength fasteners and should not be solely relied upon in performing acceptance tests.

2. ***Using Suspect/Counterfeit Grade 5 Bolts in Grade 2 Applications***—Some sites use suspect/counterfeit Grade 5 bolts in applications that only call for Grade 2 bolts. Eventually the suspect/counterfeit Grade 5 bolts will be used in an application that requires a genuine Grade 5 bolt and that application may fail. In some cases, cheap imported graded bolts have been purchased in place of ungraded bolts because the small price differential made the extra quality seem to be a bargain. Given the expense of removing suspect bolts from DOE facilities, the practice of using suspect bolts for any application should be stopped.

3. ***Keep Bolts In Original Packages***—All bolts purchased should be kept in the original packages, not emptied into bins. The packages should have labels or other markings that would permit them to be associated with a particular procurement action and a specific vendor. Approved vendor lists should be checked to assure that fastener vendors on that list have been audited for adequacy of their quality programs recently.

Disposition

Consistent with SNMG guidance:

1. ***Segregate and retain*** all suspect/counterfeit bolts including those found with headmarks that match those on the U.S. Customs Service Headmark List shown in Figure 1. The Office of Inspector General and the Office of Nuclear Safety should be notified when suspect/counterfeit bolts are being retained. These should be retained as potential evidence until specifically released by the Office of Inspector General and the Office of Nuclear Safety for Price Anderson Enforcement. Bolts on the Headmark List may only be disposed of when the above organizations no longer need them as evidence.

2. ***Report all suspect/counterfeit bolts.*** Regardless of use or test results, *it is imperative* that all suspect/counterfeit bolts be reported to ORPS in accordance with DOE 5000.3A, **Occurrence Reporting and Processing of Operations Information**, Attachment I, "Categorization of Reportable Occurrences." The reports should include identification of the particular headmark, the number of bolts found with that headmark, and the supplier.

3. ***Report to the Office of Inspector General*** cases where there are indications that suppliers knowingly supplied items and services of substandard quality.

4. ***Witness and document the melt down*** of all suspect/counterfeit bolts when approval is given for disposal as discussed in No. 1 above.

> As appropriate, DOE contractors should also report on the SPMS which provides more detailed information. To obtain a password for access to this system, contact Rick Edwards (208) 526-1099. Suspect Equipment Reports (SER) can be found in the Supplier Evaluation and Suspect Equipment (SESE) data base on the ES&H News menu of the SPMS. Only SER representatives can enter data into SER. If there is no SER representative at your site, or if you wish to have data entry access, contact Janet Macon (301) 903-6096.

Refurbished Molded-Case Circuit Breakers

Investigations thus far of electrical components at DOE facilities uncovered over 700 suspect/counterfeit molded-case circuit breakers that were previously used, refurbished and sold to DOE contractors.

The following factors should be recognized regarding suspect or refurbished circuit breakers.

1. The quality and safety of refurbished molded-case circuit breakers is questionable since they are not designed to be taken apart and serviced or refurbished. There are no electrical standards established by Underwriters Laboratory (UL) for the refurbishing of molded-case electrical circuit breakers, nor are there any "authorized" refurbishers of molded-case circuit breakers. Therefore, "refurbished" molded-case circuit breakers should not be accepted for use in any DOE facility.

2. One source of refurbished molded-case circuit breakers is from the demolition of old buildings. Some refurbishers are junk dealers who may change the amperage labels on the circuit breakers to conform to the amperage ordered and then merely clean and shine the breakers.

   This situation was brought to DOE's attention by the Nuclear Regulatory Commission (NRC) which, in turn, had been informed of the practice by the company that manufactures circuit breakers. In early 1988, a sales representative identified "refurbished" circuit breakers at Diablo Canyon Nuclear Power Plant. A subsequent investigation confirmed that circuit breakers sold to the power plant as new equipment were actually refurbished. The managers of the two firms that refurbished and sold these breakers have been convicted of fraud and have paid a substantial fine.

3. NRC published Information Notice No. 88-46 dated July 8, 1988, on the investigation findings and circulated it to all applicable government agencies, including DOE. On July 20, 1988, DOE notified all field offices that refurbished circuit breakers may have been installed in critical systems. Shortly thereafter, DOE established the Suspect Equipment Notification System (SENS), a submodule of ES&H Events and News on the Safety Performance Measurement System (SPMS). SENS has since been replaced by the Supplier Evaluation and Suspect Equipment (SESE) submodule which includes Suspect Equipment Reports.

4. Some of DOE's older sites have circuit breakers in use that are no longer manufactured. According to the Nuclear Management and Resources Council (NUMARC), examples of such breakers are Westinghouse breakers with frames E, EA, F and FA. If a DOE contractor has an electrical box that requires a breaker with one of these frame sizes, that contractor would not have been able to purchase it from Westinghouse for several years. If the contractor were to order a replacement breaker from an authorized Westinghouse dealer, the dealer could not get a new replacement breaker from the manufacturer. To fill the order, the dealer had to turn to the secondary or refurbished market.

   Dealing with an authorized distributor does not preclude ending up with refurbished circuit breakers. Westinghouse has announced that it is considering satisfying this market by manufacturing circuit breakers that will fit in these applications.

   The solution, as recommended by NUMARC, is not to focus on the credentials of the distributor but on the *traceability* of the circuit breaker itself. *A purchaser can be assured of having a new circuit breaker only if the breaker can be traced back to the original manufacturer.*

Indicators of Refurbished Breakers

Typically, refurbished circuit breakers sold as new equipment have one or more of the following characteristics:

- The style of breaker is no longer manufactured.
- The breakers may have come in cheap, generic-type packaging instead of in the manufacturers' original boxes.
- Refurbished circuit breakers are often bulk-packaged in plastic bags, brown paper bags, or cardboard boxes with handwritten labels. *New circuit breakers are packed individually in boxes that are labeled with the manufacturer's name, which is usually in two or more colors, and are often date stamped.*
- The original manufacturer's labels and/or the Underwriters Laboratory (UL) or Factory Mutual (FM) labels may have been counterfeited or removed from the breaker. Refurbishing operations have been

known to use copying machines to produce poor quality copies of the original manufacturer's and the certifying body's labels.

- Breakers may be labeled with the refurbisher's name rather than the label of a known manufacturer.
- The manufacturer's seal (often multicolored) across the two halves of the case of the breaker is broken or missing.
- Wire lugs (connectors) show evidence of tampering.
- The surface of the circuit breaker may be nicked or scratched yet have a high gloss. Refurbishers often coat breakers with clear plastic to produce a high gloss that gives the casual observer the impression that the breaker is new. The plastic cases of new circuit breakers often have a dull appearance.
- Some rivets may have been removed, and the case may be held together by wood screws, metal screws, or nuts and bolts.
- Contradictory amperage ratings may appear on different parts of the same refurbished breaker. On a new breaker, the amperage rating is stamped into, raised from, or machine-painted on the handle of the circuit breaker. In order to supply a breaker with a hard-to-find rating, refurbishers have been known to file down the surface of the handle to remove the original rating and hand-paint the desired amperage rating.

Testing

In a news release dated February 6, 1989, the National Electrical Manufacturers Association (NEMA) announced the cancellation of its Publication AB-2-1984 entitled, "Procedures for Field Inspection and Performance Verification of Molded-Case Circuit Breakers used in Commercial and Industrial Applications," and stated the following:

> *These procedures were intended for use with breakers that had been originally tested and calibrated in accordance with NEMA Standards Publication AB 1 or Underwriters Laboratories Standard UL 489, and not subsequently opened, cleaned or modified.... Therefore the Standards Publication contained none of the destructive test procedures...necessary to verify the product's ability to withstand such conditions as full voltage overload or short circuit. Without such tests, even if a rebuilt breaker had passed the tests specified in AB-2, there would be no assurance that it would not fail under overload or short circuit conditions. It is NEMA's position that regardless of the results of electrical testing, refurbished electrical circuit breakers are not reliable and should not be used.*

Precautions

Follow these precautions regarding suspect or refurbished circuit breakers.

1. ***Require*** that molded-case breakers be new and unaltered. Proof that they are new and unaltered requires the vendor to show traceability back to the original manufacturer.
2. ***Do not rely*** completely on dealing with authorized dealers for protection from purchasing refurbished molded-case circuit breakers.
3. ***Approve formal procedures*** for inspecting circuit breakers that are received and installed according to the indicators of refurbished breakers listed above.
4. ***Contact the original manufacturer*** if any indication of misrepresentation is encountered. There are many original manufacturers of molded-case circuit breakers whose products are being refurbished and sold as new. These manufacturers have the most specific information about how to assure that their products have not been refurbished.

Disposition

1. ***Segregate and retain all*** circuit breakers found with indications that they may be refurbished. These will be retained as potential evidence until specifically released by the Office of Inspector General and the Office of Nuclear Safety for Price Anderson Enforcement. Circuit breakers that may be refurbished may only be disposed of when the above organizations no longer need them as evidence.

2. ***Report*** suspect electrical components to ORPS and as appropriate to the Suspect Equipment Reports (SER) on SPMS. The ORPS categorization group should be identified as "Cross-Category Items. Potential Concerns or Issues." The description of cause section in the ORPS report should include the text "suspect counterfeit parts."

3. ***Witness and document the destruction*** of all suspect/counterfeit circuit breakers when approval is given for disposal as discussed in No. 1 above.

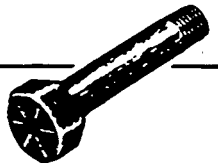
Additional Information

The Office of Nuclear Energy has the responsibility for resolving the suspect/counterfeit parts issue in the Department. Further guidance as it is developed will be disseminated to the Field Offices.

This Bulletin is one in a series of publications issued by EH to share occupational safety information throughout the DOE complex. To be added to the Distribution List or to obtain copies of the publication, call (615) 576-3482.

For additional information regarding the publications, call Barbara Bowers, Safety Performance Indicator Division, Office of Environment, Safety and Health, U.S. Department of Energy, Washington DC 20585, (301) 903-3016.

SUSPECT/COUNTERFEIT PARTS



HEADMARK LIST

E - Laminate Embrittlement

ALL GRADE 5 AND GRADE 8 FASTENERS OF FOREIGN ORIGIN WHICH DO NOT BEAR ANY MANUFACTURERS' HEADMARKS:

Grade 5 Grade 8

GRADE 5 FASTENERS WITH THE FOLLOWING MANUFACTURERS' HEADMARKS:

MARK	MANUFACTURER	MARK	MANUFACTURER
J	Jinn Her (TW)	KS	Kosaka Kogyo (JP)

GRADE 8 FASTENERS WITH THE FOLLOWING MANUFACTURERS' HEADMARKS:

MARK	MANUFACTURER	MARK	MANUFACTURER
A	Asahi Mfg (JP)	KS	Kosaka Kogyo (JP)
NF	Nippon Fasteners (JP)	RT	Takai Ltd (JP)
H	Hinomoto Metal (JP)	FM	Fastener Co of Japan (JP)
M	Minamida Sieybo (JP)	KY	Kyoei Mfg (JP)
MS	Minato Kogyo (JP)	J	Jinn Her (TW)
Hollow Triangle	Infasco (CA TW JP YU) (Greater than 1/2 inch dia)		
E	Daiei (JP)	UNY	Unyita (JP)

GRADE 8.2 FASTENERS WITH THE FOLLOWING HEADMARKS:

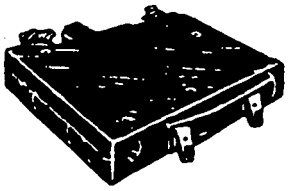
MARK	MANUFACTURER
KS	Kosaka Kogyo (JP)

GRADE A325 FASTENERS (BENNETT DENVER TARGET ONLY) WITH THE FOLLOWING HEADMARKS:

	MARK	MANUFACTURER
Type 1	A325 KS	Kosaka Kogyo (JP)
Type 2		
Type 3		

Key: CA-Canada, JP-Japan, TW-Taiwan, YU-Yugoslavia

ANY BOLT ON THIS LIST SHOULD BE TREATED AS DEFECTIVE WITHOUT FURTHER TESTING.



OR, IF YOU SEE ANY INDICATION THAT A CIRCUIT BREAKER MAY BE USED OR REFURBISHED (SEE BULLETIN, NO. DOE/EH-0266)

Attachment J.4.22
Safety History and Program Data

JUNE 13, 1994

SAFETY HISTORY & PROGRAM DATA

1. Subcontractor SAFETY PERFORMANCE AND PROGRAM

A. Workers Compensation Insurance - Experience Modification Rate (EMR)

1. Please obtain a letter* from your insurance agent (or state fund, if applicable) with your interstate EMR's for the last three rating periods. If yo do not have an interstate rating, obtain your intrastate EMR's. Then complete the following date: Attach the letter as part of this package.

	Policy Year	Modification Rate
Most Recent Policy Year	_____	_____
1 Year previously	_____	_____
2 Years previously	_____	_____

Are the above rates interstate or intrastate?_____
If intrastate, which state?_____

If your EMR is exactly 1.0 for any policy year, is it because your firm is (or was) too new or too small to have an EMR calculated?
YES_____ NO____

*Note: Any of the following methods of "obtaining a letter" are acceptable:

- Furnish a letter from your insurance agent, insurance carrier, or state fund (on their letterhead) verifying the EMR data listed above; or

- Furnish a photostat of the last three years' Experience Rating Calculation Sheets, which your insurance carrier should forward to you annually; or

- If you're in a "state fund" state, such as Ohio or West Virginia, furnish a photostat of the state's last three years' annual statement page that shows the modification rate and the coverage period.

ATTACHMENTS

° Attachment A: Evaluation of Contractors Safety Records and Potential
Attachment B: Contractor's Safety Data, First Aid Cases

G:\PROC\FORMS\SAFETY\HISTORY6.94

ATTACHMENT A

EVALUATION OF CONTRACTORS SAFETY RECORDS AND POTENTIAL

A. 1. Check your type of work:

Nonresidential Building _____

Heavy (Nonhighway) Construction _____

Plumbing, Heating and Air Conditioning _____

Other _____

2. Are accident reports (OSHA 200) and summaries sent to the following? How often?

	No	Yes	Monthly	Quarterly	Annually
Field Superintendent	___	___	_____	_____	_____
Project Manager	___	___	_____	_____	_____
President of Construction	___	___	_____	_____	_____
President of Firm	___	___	_____	_____	_____

3. Do you hold safety meetings for field supervisors? Yes___ No___

How often?

Weekly ___

Bi-weekly ___

Monthly ___

Less often as needed ___

4. Do you conduct project safety inspections? Yes ___ No ___

If yes, who conducts the inspection (title)? _____ And how often _____

B. <u>OSHA Recordable Incidents</u>

1. Furnish a copy of your firm's OSHA 200 Log from last year. It is unlikely that we qualify your company to bid FEMP work without the OSHA 200 log.

2. Using the OSHA 200 Log, Complete the following:

a.* Number of injury related fatalities from column 1 _____
b. Number of injuries with lost workdays from column 2 _____
c. Number of injuries without lost workdays from column 6 _____
d. Number of illness related fatalities from column 8 _____
e. Number of illnesses with lost workdays from column 9 _____
f. Number of illnesses without lost workdays from column 13 _____
g. Total number of injuries and illnesses on OSHA 200 Log _____

h. Total number of cases listed in columns 6 and 13 which are "first aid" cases. Highlight each of these cases by placing an asterisk beside them on the OSHA 200 Log. (See Attachment B for a definition of a first aid case.) _____

3. Employee hours worked last year (field, supervisor, and clerical) _____

4. How are accident records and accident summaries Kept? How often are they reported?

	No	Yes	Monthly	Annually
Accidents totaled for the entire Company	___	___	_____	_____
Accidents totaled by project	___	___	_____	_____
Subtotaled by superintendent	___	___	_____	_____
subtotaled by foreman	___	___	_____	_____

C. Safety Program

1. Are site safety meetings held for:

	Yes	No	Frequency	Title of Person Conducting Meeting
a. Field Supervisor?	___	___	_____	_____
b. Employees?	___	___	_____	_____
c. New Hires?	___	___	_____	_____
d. Subcontractors?	___	___	_____	_____

*Attach explanation if they resulted from conditions beyond your companies control.

ATTACHMENT A

2. Are job safety inspections conducted? Yes ___ No ___ Frequency ____

3. a. Does your company have a formal safety program? Yes ___ No ___
b. If the answer is "YES", please submit a copy with this information.

4. Explain how safety is enforced on your programs.

5. How are accident costs Kept? How often are they reported?

	No	Yes	Monthly	Annually
Cost totaled for entire company	___	___	_____	_____
Cost totaled by project	___	___	_____	_____
Subtotaled by superintendent	___	___	_____	_____
Subtotaled by foreman	___	___	_____	_____

D. 1. List key personnel planned for this project. Please list names, expected positions, and safety performance on last three projects worked on.

_____
_____
_____

E. 1. Does your company have an orientation program for new hires? Yes ___ No ___

If yes, does it include instruction on the following?

		Yes	No
a.	Head protection	___	___
b.	Eye protection	___	___
c.	Hearing protection	___	___
d.	Respiratory protection	___	___
e.	Safety belts and lifelines	___	___
f.	Scaffolding	___	___
g.	Perimeter guarding	___	___

		Yes	No
h.	Housekeeping	___	___
i.	Fire protection	___	___
j.	First aid facilities	___	___
k.	Emergency procedures	___	___
l.	Toxic substances	___	___
m.	Trenching and Excavation	___	___
n.	Signs, barricades, flagging	___	___
o.	Electrical safety	___	___
p.	Rigging and crane safety	___	___

F. 1. Does your company have a program for newly hired or promoted foremen? No ___ Yes ___

		Yes	No
a.	Safe work practices	___	___
b.	Safety supervisor	___	___
c.	Toolbox meetings	___	___
d.	Emergency procedures	___	___
e.	First aid procedures	___	___
f.	Accident investigation	___	___
g.	Fire protection and prevention	___	___
h.	New worker orientation	___	___

2. Do you hold craft "toolbox" safety meetings Yes ___ No ___

How often?

Weekly ___

Bi-weekly ___

Monthly ___

Less often as needed ___

ATTACHMENT B

CONTRACTOR'S SAFETY DATA

FIRST AID CASES

First aid cases should not be recorded on the OSHA 200 Log, but many contractors do so because the OSHA rules are hard to understand. If the firm includes first aid cases on the OSHA log, the Recordable Incident Rate looks higher than it really is. This makes it more difficult for FEMP to qualify the firm as a bidder or contractor. This page is included to help one understand what a first aid case is. After reading it, one should be able to understand item 2 on Safety Data page 4.

General Overview

- First aid cases include one-time treatment and subsequent observation of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care even though it may be provided by a physician or registered professional personnel. Administration of a single dose of a prescription medication on the first visit for a minor injury is first aid. Retreatments constitute Medical Treatment Cases. Repeated use of nonprescription medication, other than antiseptic, is a first aid case.

Example of first aid treatment for certain types of injuries and illnesses:

- Abrasion - Limited to cleaning wound, soaking, applying antiseptic, medication, and bandaging on first visit. Follow-up visits are restricted to observation and changing bandages.

- Bruises - Limited to a single soaking or applying cold compresses and any follow-up visits for observation of the injury.

- Burns- Thermal and Chemical (resulting in destruction of tissue by direct contact) - Limited to cleaning or flushing the surface, soaking, applying cold compresses, antiseptic, medication, and bandaging on first visit. Follow-up visits are restricted to observation, changing bandages, and nonprescription medication other than antiseptic.

- Cuts and Lacerations - Limited to cleaning wound, soaking, applying antiseptic, medication and bandaging on first visit. Follow-up visits are restricted to observation and changing bandages.

- Eye Injuries - Limited to irrigation, removal of foreign material no imbedded in eye, and one-time treatment of minor corneal scratches and abrasions. Administration of nonprescription medication and single doses of prescription medications.

- Inhalation of Toxic or Corrosive Gases - Limited to removing the employee to fresh air or the one-time administration of oxygen for several minutes.

CONTRACTOR'S SAFETY DATA

FIRST AID CASES

- Splinters, and Puncture Wounds - Limited to cleaning wound, removing foreign object(s) by tweezers or other simple technique, applying antiseptic, medication, and bandaging on first visit. Follow-up visits are restricted to observation and changing bandages.

- Sprains and Strains - Limited to soaking, applying cold compresses or use of elastic bandage on first visit. Follow-up visits are restricted to observation and applying bandages.

Examples of Diagnostic Procedures Considered First Aid

- Hospitalization for observation where no medical treatment is rendered other than first aid. However, if the employee misses all of his next scheduled shift, the case becomes a Lost Workday Case.

- Visit to a physician or nurse for observation only is first aid.

- X-ray examination for fracture is diagnostic. Where X-ray is negative, the case is first aid.

Examples of Preventive Procedures and Treatment Considered First Aid

- Tetanus shots are preventive and are first aid cases unless reaction to the shot necessitates treatment.

- Preventive Medication - Reaction to preventive medication such as flu shots (not administered because of an occupational injury or illness).

NOTE: OSHA also publishes a reference booklet "Record Keeping Guidelines for Occupational Injuries and Illnesses" to assist in correctly catagorizing injuries and illnesses.

Attachment J.4.23

Access & TLD Request, Form No. FS-F-3207 (Rev 3/3/93)

FEMP
ACCESS REQUEST

(Note: Picture ID required)

FAX NUMBERS: Visitors - 648-5606
Permanent - 648-5599

TO BE COMPLETED BY REQUESTOR

TO BE COMPLETED BY SECURITY

_____ US CITIZEN

_____ NON-US CITIZEN

(CONTACT SECURITY 648-5602)

COUNTRY _____

ACCESS TYPE:

_____ VISITOR _____ DOE-FN _____ PERMANENT SUBCONTRACTOR

_____ CONSTRUCTION VISITOR _____ CONSTRUCTION SUBCONTRACTOR

_____ SHORT-TERM TEAMING PARTNER _____ TEMP. SUBCONTRACTOR

EXEMPTION: _____ SUBSTANCE ABUSE PROGRAM (SAP)
_____ CLASSROOM TRAINING

PRA FORM PREVIOUSLY SUBMITTED? ☐ YES ☐ NO

SAFETY SENSITIVE POSITION? ☐ YES ☐ NO *(See back)*

BADGE NUMBER ISSUED: _____

FORMER BADGE NUMBER: _____

PERSONAL INFORMATION

NAME: *(Last, First, Middle Initial)*

DATE OF BIRTH:

SEX: ☐ MALE ☐ FEMALE

PREFERRED FIRST NAME (FOR PERMANENT BADGE)

SOCIAL SECURITY NUMBER:

PERMANENT HOME ADDRESS:

STREET: CITY: STATE: ZIP CODE:

EMPLOYER INFORMATION

COMPANY NAME:

COMPANY TELEPHONE NO: ( )

COMPANY ADDRESS:

STREET: CITY: STATE: ZIP CODE:

JOB CODE: _____ JOB TITLE: _____

COMPANY HOME OFFICE CONTACT:

DATE(S) ACCESS REQUIRED:

START DATE: _____/_____/_____ END DATE: _____/_____/_____ *(Maximum 1 Year)*

MIT BADGE ONLY _____ to _____

ON SITE CONTACT/SUPERVISOR (PRINTED): _____ TELEPHONE NO: _____

SIGNATURE OF AUTHORIZER (FOR VISITORS) OR TECH. REP. (FOR SUBS. & TEAMING PARTNERS): _____ BADGE NO: _____
(Construction Subcontractor is Site Contact and Authorizer)

MEDICAL REQUIREMENTS

CAL EXAM REQUIRED? _____ YES _____ NO
BASELINE PHYSICAL INCLUDING: _____ LEAD WORKER _____ ASBESTOS WORKER _____ RESPIRATOR WEARER

TRAINING REQUIREMENTS

_____ CONSTRUCTION RULES & REGULATIONS
_____ GENERAL EMPLOYEE TRAINING (GET)
_____ SITE WORKER TRAINING (SWT)
_____ RADIOLOGICAL WORKER I (RAD I)
_____ RADIOLOGICAL WORKER II (RAD II*)
(*BASELINE IN VIVO REQUIRED)

_____ RESPIRATOR
_____ ASBESTOS O&M
_____ ASBESTOS ABATEMENT WORKER
_____ ASBESTOS ABATEMENT PRACTICES (CONTRACTOR/SUPERVISOR)
_____ CONFINED SPACE

_____ HAZARDOUS ENERGY & MATERIAL CONTROL (LOCK & TAG)
_____ LEAD WORKER
_____ OSHA OUTREACH (____30HR / ____10HR)
_____ 29 CFR 1910.120 SUPERVISOR TRAINING
_____ OTHER _____

DOSIMETRY REQUIREMENTS

YOUR ESTIMATED WHOLE BODY DOSE RECEIVED AT NON-FERNALD SITE FACILITIES IS:

_____ mrem THIS CALENDAR QUARTER _____ mrem THIS CALENDAR YEAR)

BIOASSAY: _____ SAMPLE NUMBER
_____/_____/_____ SAMPLE DATE

_____ BASELINE IN-VIVO*
DATE: _____
_____ THORIUM SAMPLE

HAVE YOU BEEN ADMINISTERED RADIOPHARMACEUTICALS WITHIN THE LAST MONTH?
_____ YES _____ NO

RADIOLOGICAL ESCORT REQUIRED? _____ YES _____ NO

ESCORT SIGNATURE: _____ PRINTED _____

DATE: BADGE: TELEPHONE NO:

Escort is responsible for ensuring that the visitor has completed training requirements contained in SE-0001

SIGNATURE OF TLD RECIPIENT: _____

DATE: REVIEWED BY: *(INITIALS)* DATE:

DO NOT WRITE BELOW THIS LINE - TO BE COMPLETED BY DOSIMETRY

EMPLOYMENT STATUS: _____ (A) MONITORED WORKER _____ (B) NON-EMPLOYEE RADIATION WORKER _____ (C) MONITORED VISITOR

DOE OCCUPATION CODE:	CONTRACT CODE:	TLD NUMBER:	ISSUE DATE:	RETURN DATE:	PERMANENT BADGE REQUESTED? _____ LOCATION _____

TLD RESULTS: _____ SKIN _____ WHOLE BODY _____ RADIATION TYPE

SECURITY BADGE NO:

THIS DOCUMENT CONTAINS INFORMATION COVERED BY THE PRIVACY ACT

n 301 of Title 10 to US Code authorizes collection of this information. The primary use of this information is to allow for accurate recording and tracking of your tion exposure at the Fernald site and other nuclear facilities. Additional disclosures of the information may be: To DOE contractors in performance of their contracts, to the DOE, Department of Health, and Human services, Department of Labor and other organizations for epidemiological studies; and to legal organizations for court proceedings. Failure to provide all or part of the requested information may result in your not being issued a personal radiation monitoring device and subsequently being denied access to the radiological area(s).

FS-F-3207 (REV. 04/01/96)

CONSTRUCTION SUBCONTRACTORS

JOB CODES FOR CONSTRUCTION SUBCONTRACTORS

CONSTRUCTION CRAFT, INCLUDING FOREMEN
Check the Appropriate Position:

✓	Craft	Code	Safety Sensitive Position?
	Asbestos/Instructor Worker	CN01	YES
	Boilermaker	CN02	YES
	Bricklayer	CN03	YES
	Carpenter	0006	YES
	Cement Mason	CN04	YES
	Electrician	0022	YES
	Floor Layer	CN05	YES
	Glazer	CN06	YES
	Ironworker (Rebar)	CN07	YES
	Ironworker (Structural)	CN07	YES
	Lather	CN08	YES
	Laborer (Construction)	CN38	YES
	Millwright	0050	YES
	Operating Engineer (Operator)	CN09	YES
	Painter	0054	YES
	Pile Driver (Driller)	CN10	YES
	Pipefitter	0055	YES
	Plumber	CN11	YES
	Plasterer	CN12	YES
	Roofer	CN13	YES
	Sheetmetal Worker	CN14	YES
	Sprinkler Fitter	CN15	YES
	Tile Finisher	CN16	YES
	Tile Layer	CN17	YES

CONSTRUCTION SUBCONTRACTOR STAFF
Check the Appropriate Position:

✓	Staff	Code	Safety Sensitive Position?
	Administrative	GC08	NO
	Office Engineer	EP01	NO
	Construction Engineer	OP12	YES
	Construction Superintendent	OP12	YES
	Cost/Scheduler/Estimator	AN01	NO
	Engineering Aid/Technician	NE04	NO
	Project/Construction Manager	EP05	NO
	Health and Safety Representative	TA04	NO
	Quality Representative	EO05	YES

NON-CONSTRUCTION JOB CODES

To obtain Non-Construction Job Codes, please view FERMCO Human Resources job codes (listing in IPEx), or hard copy can be obtained by contacting Security at 648-3667.

Any questions concerning job codes, please contact Medical at 648-4442 or 648-4433.

SAFETY SENSITIVE POSITION CHECKLIST

WILL THE INDIVIDUAL:

	Yes	No	
1.	☐	☐	Have unescorted access to the controlled area of the FEMP?
2.	☐	☐	Be working at unprotected heights (for example ladders and scaffolds)?
3.	☐	☐	Be working with or operating of hazardous moving machinery or equipment?
4.	☐	☐	Be operating a motor vehicle (forklifts, cars, or trucks)?
5.	☐	☐	Be working with a hazardous substance that could cause significant injury or illness?

If you answered "yes" to any of these questions the applicant is required to receive a confirmed negative drug test result prior to badge issuance and reporting to work.

Please schedule testing at least three working days prior to expected work date. To schedule drug testing, contact Medical Services (513) 648-4433.

000644

Attachment J.4.24
Substance Abuse Testing
for FERMCO Construction Subcontractor Employee Site Access

June 28, 1995

N O T I C E

SUBSTANCE ABUSE TESTING FOR FERMCO CONSTRUCTION SUBCONTRACTOR EMPLOYEE SITE ACCESS

Effective July 1, 1995, employees of all FERMCO construction subcontractors, except as noted below, must submit a urine sample to the FERMCO Medical Department and receive a confirmed negative result for substance abuse prior to being issued an identification badge and being granted access for work at the Fernald Environmental Management Project including any offsite FERMCO or DOE office hereafter referred to as FEMP. Any subcontractor employee receiving a confirmed positive result for substance abuse will be denied access to the FEMP. Required FERMCO Training and any required physical examinations may be completed while waiting for results of the substance abuse testing.

Any individual whose badge is terminated for more than thirty calendar days must reapply for a badge and therefore shall submit to the above requirement for badge reissuance.

This requirement does not apply to visitors, as defined below, who are not performing work in safety sensitive functions. For the purpose of this substance abuse testing, a "visitor" is defined as anyone requiring access to the FEMP for a period of fourteen (14) calendar days or less that will not be performing work in a "safety sensitive function". A "safety sensitive function" is defined as follows:

* Working at unprotected heights in excess of six (6) feet, i.e. on ladders, on scaffolding, etc.

* Working with or operating hazardous moving machinery i.e. fork lifts, manlifts, cranes, excavation equipment, etc.

* Operation of any motor vehicle on site i.e. automobiles, pickup trucks, flat bed trucks, trailer trucks etc., and including the operation of any FERMCO supplied vehicle off site.

* Working with any hazardous material or substance that could cause significant injury or illness.

Fernald Environmental

FERMCO

Restoration Management Corporation

Anyone requiring access to the FEMP for more than fourteen (14) calendar days is not considered a visitor and must submit to substance abuse testing, as described herein, prior to being issued an identification badge and being granted access for work at the FEMP.

To ensure testing is completed and the test result is returned prior to the expected work date, please schedule substance abuse testing at least three working days prior to that date. Testing may be scheduled by contacting Theresa Roberts at (513) 648-5524.

If you have any questions, please contact the FERMCO Contract Administrator or Construction Contract Manager responsible for this subcontract.

Attachment J.4.25

Statement and Acknowledgement, Standard Form 1413

STATEMENT AND ACKNOWLEDGMENT

FORM APPROVED OMB NO. 9000-0014

ublic reporting burden for this collection of information is estimated to average .15 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the FAR Secretariat (VRS), Office of Federal Acquisition and Regulatory Policy, GSA, Washington, D.C. 20405; and to the Office of Management and Budget, Paperwork Reduction Project (9000-0014), Washington, D.C. 20503

PART I - STATEMENT OF PRIME CONTRACTOR

1. PRIME CONTRACT NO.	2. DATE SUBCONTRACT AWARDED	3. SUBCONTRACT NUMBER

4. PRIME CONTRACTOR (Name, address, and ZIP Code)	5. SUBCONTRACTOR (Name, address, and ZIP Code)

6. The prime contractor states that under the contract shown in Item 1, a subcontract was awarded on date shown in Item 2 by (Name of Awarding Firm)_____ to the subcontractor identified in Item 5, for the following work:

7. PROJECT	8. LOCATION

9. NAME AND TITLE OF PERSON SIGNING	10. BY (Signature)	11. DATE SIGNED

PART II - ACKNOWLEDGMENT OF SUBCONTRACTOR

12. The subcontractor acknowledges that the following clauses of the contract shown in Item 1 are included in this subcontract:

Contract Work Hours and Safety Standards Act - Overtime Compensation - Construction	Davis-Bacon Act
Payrolls and Basic Records	Apprentices and Trainees
Withholding of Funds	Compliance with Copeland Regulations
Disputes Concerning Labor Standards	Subcontracts
	Contract Termination-Debarment
	Certification of Eligibility

13. NAME(S) OF ANY INTERMEDIATE SUBCONTRACTORS, IF ANY

14. NAME AND TITLE OF PERSON SIGNING	15. BY (Signature)	16. DATE SIGNED

FS-F-4215 (Rev. 10/06/95)

Attachment J.4.26
Subcontractor Daily Report

EXHIBIT 1

SUBCONTRACTOR DAILY REPORT

SUBCONTRACT NO.:	SUBCONTRACTOR NAME:	WORK ORDER NO.:

TEMPERATURE RANGE:	WEATHER CONDITIONS:

NUMBER OF EMPLOYEES: SUBCONTRACTOR: SUBSUBCONTRACTOR: SUPERVISORS: VISITORS:

SAFETY PROBLEMS ENCOUNTERED:

DESCRIPTION OF WORK PERFORMED, PROBLEMS ENCOUNTERED AND RESOLUTIONS:

DESCRIPTION OF OVERTIME WORK PERFORMED, INCLUDING NUMBER OF EMPLOYEES AND DURATION:

GENERAL COMMENTS:

CURRENT DAY WORK FORCE:	SUBCONTRACTOR SIGNATURE

Attachment J.4.27
FERMCO Human Resources Policy 145
(Employee Discipline)

FOR INFORMATION ONLY

I. PURPOSE

This policy describes the FERMCO rules of conduct required of employees and the actions to be taken by supervisors and management if these rules are violated.

II. DEFINITIONS

Disciplinary Suspension - Temporary removal from the workplace as a penalty for violating the rules. This type of suspension is without pay.

Investigative Suspension - Temporary removal from the work place during an investigation which may be with or without pay.

Termination - Severance of employment from the Company.

Verbal Reprimand - Spoken communications with an employee who is considered to be guilty of an infraction of Company rules or fails to perform assigned duties in a satisfactory manner. Such a reprimand may be documented by the supervisor/manager.

Written Reprimand - A formal record of employee disciplinary action.

III. POLICY

A. Employment at FERMCO is conditional upon the employee's acceptance and adherence to the Company's rules and regulations.

B. Disciplinary action may result in a documented verbal reprimand, a written reprimand, a disciplinary suspension, or a termination.

C. A suspension to conduct an investigation or other disciplinary action may be warranted when an employee is alleged to be guilty of an infraction(s) of company rule(s) or fails to perform the job in the manner expected of an employee.

D. Represented employees are to utilize the grievance procedure in the bargaining agreement to appeal any Company action. Verbal and/or written warnings are not grievable.

E. VERBAL REPRIMAND

A verbal reprimand is intended to inform an employee of a violation of company rule(s), policies, and/or procedure(s). The Record of Verbal Reprimand form FS-F-3666-1 (Attachment A) will be used to document the reprimand. This step may be repeated until corrective action occurs.

III. POLICY (cont.)

F. WRITTEN REPRIMAND

1. A written reprimand is intended for use in situations more serious than those for which a verbal reprimand is used or for repeated lesser violations. The Record of Written Reprimand form FS-S-3666 (Attachment B) will be used. Written reprimands serve the following purposes:

   a. Documents an infraction for incorporation into an employee's permanent personnel file.

   b. Promotes equal and fair treatment.

   c. Reduces the chances of arbitrary dismissal.

   d. Allows the employee an opportunity to correct minor rule infractions.

   e. Ensures that employees are aware of their deficiency before more drastic disciplinary action is taken.

   f. Enforces the Company's rules, policies, procedures, and discipline.

2. Written reprimands are used to immediately document a problem and to identify the corrective action required. Written reprimands are not to be used in lieu of performance appraisals or as documentation of long-term performance.

3. Employees may be given a written reprimand for misconduct. The employee shall be informed of the rule(s), policy, and/or procedure(s) that were violated.

III. POLICY (cont.)

G. RULES OF CONDUCT

These regulations, which aid in maintaining safe and desirable working conditions, are for the general guidance of employees to assure uniform and fair application of disciplinary action, should it be necessary. The regulations are an outline of the types which are considered misconduct. It is obviously impossible to compile a complete summary of violations requiring disciplinary action. However, the violations and penalties listed are not all-inclusive but provide a basic pattern for such action. Any disciplinary action will, of course, be based on the facts and circumstances in each specific case. The offenses are divided into three main groups, depending upon the relative seriousness of the infraction.

1. Any of the following actions are considered extremely serious misconduct and may result in immediate discharge.

   a. Deliberate damage to the property of the Company, the U.S. Government, another employee, a contractor, a vendor, or others.

   b. Taking, diverting, receiving, or possessing without authorization goods, materials, equipment, or other property belonging to the Company, the U.S. Government, another employee, a contractor, a vendor, or others.

   c. Fighting, assault, or other disorderly conduct which endangers the safety of persons, equipment, or other property.

   d. Possessing, passing, or using weapons, incendiary devices, or explosives or conspiring or attempting to do same.

   e. Criminal conduct on Company-owned or controlled property, or criminal conduct off Company property which adversely impacts the work place or the Company's image.

   f. Indecent conduct, obscene conduct, or sexual harassment.

   g. Willful hampering of work or production.

   h. Insubordination, including failure to carry out definite instructions or assignments.

III. POLICY (cont.)

i. Falsification or misrepresentation of records, reports, or other information required by or concerning the Company or the customer.

j. Gambling or conducting gambling activities.

k. Using, possessing, or passing intoxicants, narcotics, hallucinogens, depressants, stimulants, or other such drugs or conspiring or attempting to do same. (Use of drugs prescribed by a legally licensed physician should be reported to the Medical Department or Company doctor to determine work restrictions, if any, required in the interest of safety.)

l. Deliberate sleeping during working hours.

m. Conduct which has a serious detrimental effect on the safety or security of employees, the general public, the work site or classified or proprietary information.

n. Engaging in illegal or unethical business practices or creating, maintaining, and/or failing to disclose a conflict with the business interests of the Company or the U.S. Government.

o. Making false accusations of serious misconduct against another employee.

p. Refusal to submit to reasonable search.

q. Failure to meet the requirements of the Drug-Free Workplace Act (Fitness for Duty and Substance Abuse Program).

2. Any of the following types of misconduct by an employee is considered a serious offense. The first of such acts may result in a suspension without pay, except that offenders with a record of a prior suspension may be discharged. A second act of misconduct, not necessarily the same type of offense, may result in discharge.

a. Negligently damaging, wasting, or abusing materials, products, tools, equipment, or other Company or government property.

III. POLICY (cont.)

b. Reporting to work under the influence of intoxicants, narcotics, hallucinogens, depressants, stimulants, or other such drugs. (Use of drugs prescribed by a legally licensed physician should be reported to the Medical Department or Company doctor to determine work restrictions, if any, in the interest of safety.)

c. Unauthorized selling, soliciting, or canvassing.

b. Concealing defective work.

e. Abusive or threatening language.

f. Playing pranks or "horseplay" (pranks or horseplay causing property damage or injury to others may result in discharge) or causing a distraction in the workplace through gestures, comments, or written communication.

g. Violation of safety regulations and procedures, including failure to follow dosimetry procedures, the use of food and/or tobacco products in prohibited areas, or failure to use designated safety equipment or apparel. Safety violations having very serious consequences may result in discharge.

h. Sleeping during working hours.

i. Failure to clock in or out as instructed, or clocking in or out for another employee.

j. Possessing, passing, or using a camera or attempting to do same.

k. Failure to maintain adequate housekeeping.

III. POLICY (cont.)

3. Any of the following types of misconduct by an employee is considered an offense which is not to be tolerated. The first offense may result in a written warning. A second offense, not necessarily the same type of misconduct, may result in 3 days off without pay. Any further misconduct of the type shown below, but not necessarily the same type of offense, may result in discharge.

   a. Excessive absence or tardiness, unreported absence, absence or tardiness without justifiable cause.

      NOTE: Unreported absence of 3 consecutive working days will be considered a quit without notice. Request for or submission of benefit forms does not constitute reporting absence per HR-141, Absence From Work or Work Station.

   b. Leaving job or work area before end of shift or beginning of assigned meal period without permission or justifiable cause.

   c. Absence from work area without permission or satisfactory reason.

   d. Loafing or loitering.

   e. Failure to promptly report a personal work injury.

   f. Posting unauthorized notices, defacing walls, or tampering with bulletin boards.

   g. Improper operation or parking of personal vehicles on site property.

H. SUSPENSION

1. An employee may be suspended without pay for a period of time determined by Human Resources (salaried employees) or Industrial Relations (represented employees).

2. Suspension with or without pay may be used in connection with a simultaneous investigation.

3. Every effort will be made to complete the investigation within 5 working days.

III. POLICY (cont.)

4. Reasons for suspension may include, but are not restricted to:

   a. Fighting on the job.

   b. Pending drug identification.

   c. After-hours misconduct.

   d. Safety related issues.

5. Employees will be given a written notice of suspension stating the cause of suspension, the duration of suspension, and whether it will be paid or unpaid. The notice should be signed by the employee's supervisor, the Human Resources or Industrial Relations representative, and acknowledged by the employee.

IV. PROCEDURE

SUPERVISOR/MANAGER

A. ADMINISTERING A VERBAL REPRIMAND:

1. Inform the employee of the rule(s), policies and/or procedure(s) that have been violated or the performance problems requiring corrective action.

2. Document these discussions and incorporate the documentation in the employee's file maintained by the Supervisor/Manager. Use the Record of Verbal Reprimand form FS-F-3666-1 (Attachment A).

3. The employee should be given a reasonable amount of time to improve.

4. Depending on the severity of the problem, this step may be repeated until corrective action occurs. Improved performance must occur over a period of time. Failure to sustain improvement over a period of time may result in further disciplinary action.

IV. PROCEDURE (cont.)

SUPERVISOR/MANAGER with assistance as required from HUMAN RESOURCES (for salaried employees) or INDUSTRIAL RELATIONS (for represented employees)

B. ADMINISTERING A WRITTEN REPRIMAND:

1. Contact HR or IR before initiating any suspension.

2. Initiate an investigation including a review of the employee's past record to ensure that the employee's misconduct is supported by facts rather than rumors or hearsay. If suspension is required in order to conduct further investigation see III.H.

   NOTE: If suspended, the employee shall be given written notice of suspension indicating the dates of suspension and the date of return.

3. At a private meeting with the employee (represented employees may request the presence of a union steward and such will be provided) inform the employee of the rule(s), policies, and/or procedure(s) violated, and that a written reprimand will be issued.

4. Prepare the Record of Written Reprimand form FS-F-3666 (Attachment B). It is recommended that the form be completed in the presence of the employee.

5. Have the employee sign the form. If the employee refuses to sign the reprimand form, note the employee's refusal to sign, and have two supervisors witness and sign the form. Give the employee a copy of the reprimand.

6. After the appropriate manager has reviewed the reprimand, insert the form into the employee's permanent personnel file.

C. ADMINISTERING ANY SUSPENSION:

Contact Human Resources (for salaried employees) or Industrial Relations (for represented employees) before initiating any suspension.

D. ADMINISTERING A TERMINATION:

For salaried employees, see HR-106, Termination of Salaried Employees. For Represented employees, contact Industrial Relations.

V. EXCEPTIONS

Approved by the President of FERMCO with advice of counsel, and as recommended by the Human Resources Manager or the Industrial Relations Manager.

ATTACHMENT A
RECORD OF VERBAL REPRIMAND, Form FS-F-3666-1
(FRONT)

FERMCO
RECORD OF VERBAL REPRIMAND

PLEASE PRINT OR TYPE ALL INFORMATION

1. EMPLOYEE'S NAME	2. SOCIAL SECURITY NUMBER	3. BADGE NUMBER	4. DATE OF REPRIMAND

5. DEPARTMENT SECTION NAME	6. POSITION/CLASSIFICATION/TITLE

MANAGER'S/SUPERVISOR'S CHECKLIST

✓	Please check to ensure the following objectives were achieved:
	The counseling was conducted in private.
	The FERMCO Employee Discipline policy was explained to the employee.
	This action is consistent with established discipline policy.
	This action is consistent with previous discipline practices.
	The employee was informed that this infraction was recorded as a verbal reprimand.
	The employee was informed why a verbal reprimand for this infraction was warranted.

7. REASON FOR REPRIMAND

8. SPECIFIC DETAILS OF INFRACTION AND COUNSELING COMMENTS

9. MANAGER'S/SUPERVISOR'S NAME	10. MANAGER'S/SUPERVISOR'S POSITION

11. MANAGER'S/SUPERVISOR'S SIGNATURE	BADGE NUMBER	DATE

FS-F-3666-1 10/24/93

ATTACHMENT A
RECORD OF VERBAL REPRIMAND, Form FS-F-3666-1
(BACK)

FERMCO
DIRECTIONS FOR COMPLETING FORM FS-F-3666-1

BLOCK	DIRECTIONS
1	Enter the employee's first name, middle initial, and last name.
2	Enter the employee's social security number.
3	Enter the employee's badge number.
4	Enter the date the reprimand was given.
5	Enter the employee's department/section name.
6	Enter the position, classification, or title of the employee.
7	Enter the specific reason the employee was given the verbal reprimand.
8	Enter all specific details of the infraction, significant counseling comments provided by the manager/supervisor, and expected performance standards. Include what the next step (i.e., written reprimand) may be if the employee does not correct the behavior which resulted in the verbal reprimand. Enter any significant comments the employee provides.
9	Enter the Manager's/Supervisor's name.
10	Enter the Manager's/Supervisor's position.
11	Enter the Manager's/Supervisor's signature, badge number, and date.

REMEMBER.
YOU ARE TRYING TO HELP THE EMPLOYEE.

ATTACHMENT B
RECORD OF WRITTEN REPRIMAND, Form FS-F-3666
(FRONT)

FERMCO
RECORD OF WRITTEN REPRIMAND

PLEASE PRINT OR TYPE ALL INFORMATION

1. EMPLOYEE'S NAME 2. SOCIAL SECURITY NUMBER 3. BADGE NUMBER 4. DATE OF REPRIMAND

5. DEPARTMENT/SECTION NAME 6. POSITION CLASSIFICATION/TITLE 7. LENGTH OF SERVICE 8. TIME IN PRESENT POSITION

THE FOLLOWING ARE BRIEF STATEMENTS OF THE EMPLOYEE'S ACTION(S) THAT GAVE CAUSE TO THIS WRITTEN REPRIMAND AND SUGGESTED ACTION(S) FOR AVOIDING ANY RECURRENCE IN THE FUTURE.

9. WHAT IS THE EMPLOYEE BEING REPRIMANDED FOR? (Give details of incident(s) requiring this disciplinary action.)

10. WHAT POLICY PROCEDURE OR OTHER CONDUCT RULE HAS BEEN VIOLATED?

11. IF THE CONDUCT IS REPEATED OR OTHER DISIPLINARY PROBLEMS DEVELOP WHAT ADDITIONAL DISIPLINARY ACTION WILL LIKELY RESULT?

12. MANAGER SUPERVISOR - RESTATE FOR EMPLOYEE'S BENEFIT THE EXPECTED PERFORMANCE STANDARDS WHICH MUST BE MET IN ORDER TO CORRECT THE PROBLEM

13. HAS EMPLOYEE BEEN WARNED ABOUT THIS ACTION BEFORE?

☐ NO ☐ YES If Yes, How? ☐ WRITTEN ☐ VERBAL

14. BY WHOM? (Name) BADGE NUMBER 15. DATE OF WARNING

16. MANAGER'S SUPERVISOR'S NAME POSITION

17. MANAGER'S SUPERVISOR'S SIGNATURE BADGE NUMBER DATE

18. EMPLOYEE'S COMMENTS (Employee may use attachment if necessary)

My signature hereupon does not necessarily signify my agreement with the above but attests that I have read and understand the serious nature of this report. A repetition of this action or other acts of a similar nature may result in more serious corrective action and/or termination of employment.

19. EMPLOYEE'S SIGNATURE DATE

20. REVIEWED BY DATE

FS-F-3666 (6-23-93)

ATTACHMENT B
RECORD OF WRITTEN REPRIMAND, Form FS-F-3666
(BACK)

FERMCO
DIRECTIONS FOR COMPLETING FORM FS-F-3666

BLOCK	DIRECTIONS
1	Enter the employee's first name, middle initial, and last name
2	Enter the employee's social security number
3	Enter the employee's badge number
4	Enter the date reprimand is written
5	Enter the employee's department/section name.
6	Enter the position, classification, or title of employee.
7	Enter the employee's length of service at the FEMP
8	Enter the time employee has been in present position, classification or title.
9	State specifically what the employee is being reprimanded for (include date(s) and avoid making general statements such as poor work performance). Give enough information so the employee knows what behavior needs to be corrected.
10	State specifically what policy/procedure or other conduct has been violated.
11	State specifically what action will be taken if the employee does not correct the behavior she/he is being reprimanded for (e.g., put on probation, reprimanded, suspended, or terminated).
12	State specifically the expected performance standards which must be met to correct the problem, and inform the employee of these standards.
13	Check the appropriate block.
14	If block 13 is checked "yes," print the person's name and badge number
15	If block 13 is checked "yes," enter the date of the warning.
16	Print your name and position.
17	Sign (include badge number and date).
18	Request that the employee enter her/his comments (read or have employee read statement).
19	Have the employee sign and date. (If the employee refuses to sign, see HR-145, Section IV B 4.)
20	Have the Human Resources Manager or the Industrial Relations Manager, as appropriate, sign indicating her/his review

REMEMBER,
YOU ARE TRYING TO HELP THE EMPLOYEE.

Attachment J.4.28

FERMCO Human Resources Policy 109

(Applying for a Position Contained in the Job Opportunity Listings)

CONTROL NO. FER-0017

SITE PROCEDURE HR-109
REVISION NO. 6

329

APPLYING FOR A POSITION CONTAINED IN THE JOB OPPORTUNITY LISTINGS

Effective Date: 01-31-96

Originator (Subject Expert): Morris T. Lee 1/24/96
Date

Checker Concurrence: R J Sullivan 1/24/96
Robert J. Sullivan Manager, Human Resources Date

APPROVED BY: Ed Zobrist 1/26/96
Ed Zobrist, Vice President Administration

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Fernald Environmental Restoration Management Corporation
P. O. Box 538704
Cincinnati, Ohio 45253-8704

Title: APPLYING FOR A POSITION CONTAINED IN THE JOB OPPORTUNITY LISTINGS	DOCUMENT NO: HR-109	
	Date: 01-31-96	Revision No.6
COMPLIANCE WITH THIS PROCEDURE IS MANDATORY WHILE PERFORMING THE ACTIVITIES WITHIN ITS SCOPE	Page 1 of 6	

ISSUE AND REVISION SUMMARY

Revision	Date	Description of Issue or Revision
0	04-12-94	New policy being issued in reference to applying for a position contained in the Job Opportunity Listing.
1	04-22-94	The policy has been revised to reflect the following changes: 1. Candidates may submit an Opportunity Interest Form directly to Employment with no supervisory signature. 3. Candidates who qualify to interview will receive notification from Employment that they must obtain their supervisor's signature
2	08-26-94	The policy has been revised to reflect the following changes: 1. The Opportunity Interest Form will be available to employees on the CC:Mail Employment Opportunity Bulletin Board. 2. Starting with the date the employee accepts a new position as a result of a lateral or promotional move, the losing manager cannot hold the employee for more than 30 days.
3	02-24-95	The policy has been revised to reflect the following changes: 1. Employee requisitions are no longer necessary if a position within a division is to be filled by an employee currently within the same division. 2. Lateral and promotional transfers require the losing manager's authorization on the Opportunity Interest Form. 3. Employees may appeal, promotions only, by following the Open Door Policy HR-101 if the losing manager fails to sign the Opportunity Interest Form. 4. If a position is vacated and the position cannot be filled within the division, a replacement employment requisition must be approved by the Office of the President.
4	06-16-95	The policy has been revised to reflect the following changes: The signature of the losing Administrative Division Manager is now required on the Opportunity Interest Form. This is in addition to the signature of the losing Administrative Supervisor/Manager.
5	11-01-95	The policy has been revised to reflect the change in procedure for applying for an internal position.
6	01-31-96	The policy has been revised for clarification purposes regarding the SOS On Call employee.

Title: APPLYING FOR A POSITION CONTAINED IN THE JOB OPPORTUNITY LISTINGS	DOCUMENT NO: HR-109	
	Date: 01-31-96	Revision No. 6
COMPLIANCE WITH THIS PROCEDURE IS MANDATORY WHILE PERFORMING THE ACTIVITIES WITHIN ITS SCOPE	Page 2 of 6	

I. PURPOSE

This document contains the FERMCO policy and procedure for posting Job Opportunity Listings and for applying for salaried positions shown in the listings.

II. DEFINITIONS

Administrative Supervisor/Manager herein referred to as Administrative Supervisor - The designated person responsible for maintaining the department personnel file, salary administration, assessing the employee's performance, and developing the employee's expertise.

Lateral Transfer - Moving from one position to another position in the same pay grade and title in a different work group.

Promotional Transfer - Moving from one position to another position in a higher pay grade and/or different job family in a different work group.

Matrix Supervisor/Manager herein referred to as Matrixed Supervisor - The manager to whom the employee has been assigned for a specific project or a specific length of time. Responsible for day-to-day management of matrixed employee.

III. POLICY

A Job Opportunity Listing will be made available to FERMCO employees by Human Resources. Managers will give preference to existing qualified FERMCO employees.

NOTE: It is not necessary to post a position if the manager is moving an employee within his/her current division or obtaining a matrixed employee from another division. **However, a requisition would still need to be completed for the file if the employee is switching job families. The administrative manager is responsible for attaining and maintaining equal employment opportunity within his/her organization.**

IV. PROCEDURE

REQUISITION PROCESS

1. Each open requisition for a position will include the requisition number, posting date, job classification, shift, division, department, recruiter, essential position duties, and eligibility requirements.

2. When an approved personnel requisition is received by Human Resources, the new job opening will be added to the Job Opportunity Listing on the cc:Mail Employment Opportunities Bulletin Board within one day of receipt and in the hard copy postings on the following Thursday.

IV. **PROCEDURE** (cont.)

APPLYING FOR AN OPEN POSITION

3. Employees who have been in their current position for at least one year and bid on a posted position need not have the signature of their current supervisor on the Opportunity Interest Form. A copy of the Opportunity Interest Form should be given to the employee's current supervisor when sending the original form to the Human Resources Employment section.

4. Employees are eligible to bid on posted positions if they have been in their current position at least one year. Employee's who wish to bid on posted positions but have not been in their current position for one year, must have the approval signature of their Level II manager on the Opportunity Interest Form. This signature is necessary as job bid monies would need to be available to cover any resultant promotion.

   Note: Normally, only one promotional increase may be granted in a 12 month period as stated in HR-200 (Salary Administration).

   Note: An On Call employee may bid on an open full time position within the SOS group after 3 months, provided SOS has an open full time requisition available. Once an On Call employee becomes a full time employee they will have to remain in their position, within SOS, an additional 9 months. The 3 months the SOS employee worked as an On Call plus the additional 9 months they will work as a full time employee makes a total of 1 year. At the completion of 1 year the employee may exercise their right to bid on an open position as set forth in this policy.

   An On Call employee can bid on any open FERMCO full time position after being an On Call employee for 1 year.

5. Job Opportunity Listing will be available to employees on the cc:Mail Employment Opportunities Bulletin Board. The hard copy posting and Opportunity Interest forms will be available at the following locations:

   - Fernald Administration Building (Lobby)
   - Springdale Center Employment Office (Third Floor)
   - Showcase Center (Suite 222)
   - Showcase Center (First Floor - Training Area)
   - Kemper Meadows (Forest Park)

IV. **PROCEDURE** (cont.)

- Uno and Dos Buildings
- Career Development Center

EMPLOYEE

6. Obtain an Opportunity Interest Form on the P:\ Drive under the Standard Forms directory, the file name is OPPINT or by calling one of the Employment Recruiters.

7. Complete the Opportunity Interest Form, give one copy to employee's current administrative supervisor, attach a copy of a detailed resume to the original, and forward the packet to the designated recruiter.

RECRUITER/COMPENSATION

8. Review the candidate's qualifications against the position's requirements. If candidate meets the minimum requirements of the position, generate a memo notifying the candidate that his/her resume and original Opportunity Interest Form has been received and forwarded to the hiring administrative supervisor.

   If the candidate does not meet the minimum requirements of the position, generate and forward a memo notifying the candidate that no further action will be taken.

   Notify current administrative supervisor if candidate is going to be considered for an open job bid position before job offer is extended. Resolve all issues prior to extending the job offer.

HIRING SUPERVISOR

9. Contact the candidate to schedule the interview or inform the recruiter that there is no interest in the candidate.

10. Complete the Opportunity Interest Form and Interview Evaluation form, for all candidates, and return to the recruiter.

11. When a final candidate is selected, the hiring manager must forward to the recruiter the candidate's completed packet; Opportunity Interest form, resume, and Interview evaluation form.

    NOTE: Recruiter will not proceed with the hiring process for the final candidate until paperwork on all candidates is received in Employment, including completed evaluation forms on all candidates.

IV. **PROCEDURE** (cont.)

RECRUITER

12. Upon receipt of paperwork of all candidates from hiring supervisor, generate an Offer Approval Information Form and submit to Compensation for review and approval of candidate's salary.

13. If the hiring supervisor has no interest in the candidate, recruiter generates a memo to inform the candidate.

14. Once all approvals are obtained, on Offer Approval Form notify the internal candidate's current administrative supervisor of the offer and resolve all issues prior to extending the job offer.

15. Once the current administrative supervisor is notified, the recruiter will proceed with the offer to the candidate and allow 3 days for a decision.

16. If the candidate accepts the position, notify both current and hiring supervisors.

17. Establish an effective date, which will coincide with the beginning of a pay period, for the employee to assume the new position.

18. If candidate rejects offer, notify hiring manager to select a new candidate.

    NOTE: The current supervisor cannot hold the employee for more than 30 calendar days from the date the employee accepts a new position.

RECORDS

19. a. Generate updated employee Profile/Status Change (PROFILE), attach to candidate's employment paperwork, and forward to Compensation.

    b. Secure employee Performance Appraisal from current administrative supervisor/manager (if it has been 6 months or more since the employee's last review)

THE CURRENT ORGANIZATION

20. Forward the employee's department personnel file to the hiring organization's administrative supervisor with a receipt to be signed and returned.

    NOTE: The employee's personnel file must be hand-carried or sent in a sealed envelope marked TO BE OPENED BY ADDRESSEE ONLY or other appropriate statement.

IV. **PROCEDURE** (cont.)

COMPENSATION

21. Forward updated copies of the Employee Profile form to the hiring administrative supervisor for the employee's file.

HIRING ADMINISTRATIVE SUPERVISOR

22. After receiving the employee's department personnel file from the sending organization's supervisor sign and return the receipt for the sending supervisor's file.

V. **EXCEPTIONS**

Approved by the Vice President, Administration.

Attachment J.4.29
FERMCO Site Procedure PT-0006 (Rev. 2)
Packaging Low-Level Radioactive Waste (LLRW) in ISO Containers for Shipment to the Nevada Test Site

CONTROL NUMBER: ~~FH-0003~~ ~~FEX-0016-3~~
SITE PROCEDURE PT-0006 (SSOP-0078)
REVISION NO. 2

329

NON-CONTROLLED COPY

PACKAGING LOW-LEVEL RADIOACTIVE WASTE (LLRW) IN ISO CONTAINERS FOR SHIPMENT TO THE NEVADA TEST SITE

Effective Date: 03-30-95

Originator (Subject Expert): Robert P Grim 3/15/95
Date

Checker Concurrence: [signature] 3/16/95
Date

APPROVED BY: [signature] 3/30/95
Mike West, FAM of Packaging and Transportation
Date

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Fernald Environmental Restoration Management Corporation
P. O. Box 538704
Cincinnati, Ohio 45253-8704

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ISSUE AND REVISION SUMMARY

Revision	Date	Description of Issue or Revision
0	12-14-92	New procedure required for shipping LLRW in International Shipping Organizational (ISO) containers per Request No. S92-175, initiated by M. Hundley. SSOP-0079, SSOP-0078, and SSOP-0075 replace SSOP-0024.
1	10-04-94	Revision needed to add Tables 1 through 4, add ES&H requirements, update Figure 4, clarify role of Quality Assurance, and incorporate SC93-006 per Request No. S93-072, initiated by Lori Hurst. This document supersedes SSOP-0078, dated 12-14-92, Rev. 0.
2	03-30-95	Major Revision to omit the labeling, marking, and inspecting sections; revise the container preparation activities; and outline the latest responsibility changes per Request No. S94-174, initiated by B. Giessl. This document replaces SSOP-0078, dated 10-04-94, Rev. 1.

1.0 PURPOSE

1.1 This procedure provides the instructions for packaging low-level radioactive waste (LLRW) into ISO containers for shipment offsite from the Fernald Environmental Management Project (FEMP).

2.0 SCOPE

2.1 This procedure outlines the steps for (1) inspecting the waste to be packaged, (2) inspecting and preparing the empty ISO container, (3) filling the ISO with waste, (4) weighing the ISO, and (5) securing the ISO.

2.2 The packaging operation is applicable to FEMP personnel (including subcontractors) responsible for packaging LLRW in ISO containers at any packaging location of the FEMP site.

3.0 REFERENCES

3.1 EW-0001, Completing the Material Evaluation Form

3.2 EW-0006, Management of Excess Soil, Debris, and Waste from a Project

3.3 PT-0003, Control and Movement of Containers at the FEMP

3.4 PT-0011, Evaluating Low Level Radioactive Waste (LLRW) Bulk Waste Streams for Shipment

3.5 MCA-I-018, Completing the Item Production/Certification/Identification Form

4.0 RESPONSIBILITIES

4.1 Packager inspects waste and containers and packages waste per this procedure.

4.2 LLW Packaging Support ensures the box is empty and in acceptable condition before packaging. Ensures contents of ISO Containers. Coordinates the movement of containers.

4.3 Waste Characterization (WC) provides documentation supporting characterization of all LLRW packaged under this procedure.

4.4 Materials Control and Accountability (MC&A) provides bar code labels. Maintains records and inventory of ISO containers. Tracks movement of empty and full containers.

4.5 Safety and Health (S&H) provides a Radiological Safety Technician, as requested. Determines appropriate respiratory equipment and any other employee protection.

4.6 Supervisor of the Waste Generation Area specifies applicable scale procedures and standard tare weight of packages. Ensures packaging materials are available for packagers. Ensures that currently trained personnel package waste material. Ensures that personnel who package waste for shipment follow applicable Nevada Test Site (NTS) criteria and Department of Transportation (DOT) and Environmental Protection Agency (EPA) regulations. Contacts S&H to determine the appropriate respiratory protection for the process being performed and the radiological surveys required for materials moving in and out of contamination areas. Contacts Radiological Control (RC) for a Radiological Work Permit (RWP) or other safety permits and ensures permits are obtained and signed prior to performing work. Provides packagers with the required respiratory protection and other personal protective equipment. Ensures doors are secured after packaging so unknown materials are not added. Ensures waste packages are weather-protected. Contacts S&H prior to opening any container of unknown radioactive material.

4.7 Motor Vehicle Operator (MVO) delivers empty boxes to designated packaging location. Supports packager as needed per this procedure.

4.8 Performance/Quality Assurance (P/QA) overviews packaging operation to verify compliance with this procedure.

5.0 GENERAL

5.1 Any circumstance that could have resulted in an intake of radioactive materials by inhalation, ingestion, or absorption shall be immediately reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake to S&H RC Department for evaluation. When the suspect isotope is uranium, the involved employees shall report to the Urine Sampling Station at the end of their respective shift to complete an FS-F-1458, "Investigation Report" (IR), and submit an incident urine sample. The involved employees shall also report to the Urine Sampling Station at the start of their next shift to submit a follow-up urine sample. When the suspect isotope is other than uranium, the involved employee(s) shall report to the Dosimetry Section of RC for further determination of actions. Employees are responsible for complying with appropriate requirements as specified by authorized ES&H staff.

5.2 The following substitutions should be made for Contaminated Construction Removal Action Waste and Waste Stream ONL0000000002:

- Waste characterization may be performed using SSOP-0044, "Management of Excess Soil, Debris, and Waste from a Project."
- A Packager could be the subcontractor or FEMP personnel.

- A Supervisor could be the Construction Coordinator if a project is subcontracted.

5.3 DOT label letter shall be 2 inches high by 1/4 inch wide.

6.0 PREREQUISITES

6.1 Safety glasses with side shields shall be worn unless other eye protection is specified.

6.2 Respiratory protection provided by the supervisor shall be worn when required.

6.3 Gloves shall be worn when handling containers, operating equipment and when handling rough, sharp-edged, or contaminated material.

6.4 Neoprene rubber gloves shall be worn when handling HEPA type filter vacuum cleaners, or a vacuum system approved by ES&H.

6.5 Vacuum cleaners with HEPA type filters or a current DOP test label properly affixed to vacuum shall be used for cleaning.

6.6 An RWP must be approved and current.

6.7 Face shields shall be worn when removing lids or bungs of containers filled with liquids or during operations where personnel could be splashed with liquids.

6.8 Containers with unknown contents shall be labeled "UNKNOWN" (with the current date). Empty containers shall be marked "EMPTY."

6.9 Obtain the following items/supplies prior to performing the packaging operation:

- appropriate safety protective equipment
- absorbent pads
- 1/4-inch x 4-foot x 8-foot plywood sheets (all grades)
- indelible marker
- black paint, red paint, white paint (as applicable)
- clean rags
- 1-1/2 inch black metal bands, clips, and banding equipment

6.10 "Prohibited Materials" list (Attachment A) shall be displayed in the packaging area or on the container.

6.11 The "Process Area Scrap Checklist" (Attachment B) shall be displayed in the packaging area or on the container when packaging Waste Stream ONL0000000001 process area scrap.

6.12 An FS-F-3252, "Material Evaluation Form (MEF)," shall be completed to determine if the waste is RCRA or non-RCRA. The packaging operation may not be started before the characterization is completed and an MEF is assigned by WC in accordance with SSOP-0002.

6.13 A minimum of two personnel are required to package waste.

6.14 Packagers shall be qualified in use of Personal Protective Equipment (PPE).

6.15 Employees shall be briefed on and sign the RWP in black ink before performing work.

7.0 PROCEDURE

7.1 INSPECTING WASTE

Packager

7.1.1 Ensure the waste to be packaged is not on the "Prohibited Materials" list (Attachment A) and can pass either the "Process Area Scrap Checklist" (Attachment B) or the "Material Evaluation and Container Information - Scrap Vehicle" (Attachment C), when applicable.

a. If the waste is on the Prohibited Materials List or does not pass the "Process Area Scrap Checklist" or the "Material Evaluation and Container Information - Scrap Vehicle," notify supervisor for disposition before continuing procedure.

OR

b. If the waste is not on the Prohibited Materials List and passes either the "Process Area Scrap Checklist" or the "Material Evaluation and Container Information - Scrap Vehicle," continue procedure.

7.1.2 Ensure the waste characterization has been completed and an MEF has been obtained from WC.

a. If the waste characterization has been completed, package it per this procedure.

OR

b. If the waste characterization has not been completed, inform Supervisor to contact WC for disposition before continuing procedure.

CONTROL NO. ~~IC-0003~~

CONTROLLED COPY **INTERIM CHANGE TO A SITE PROCEDURE (ICP)**

329

DATE: May 26, 1995	PROCEDURE NO.: PT-0006	ICP NO.: IC95-032

PROCEDURE TITLE: Packaging LLRW in ISO Containers for Shipment to the NTS

REV. NO.: 2

ICP TYPE: [x] PERMANENT [ ] TEMPORARY

EXPIRATION:

JUSTIFICATION: Ensure all Waste Acceptance Criteria are addressed

AFFECTED PARAGRAPH(s): 6.12

EXISTING REQUIREMENT(s):

6.12 An FS-F-3252, "Material Evaluation Form (MEF)," shall be completed to determine if the waste is RCRA or non-RCRA. The packaging operation may not be started before the characterization is completed and an MEF is assigned by WC in accordance with EW-0001.

CHANGE(s):

6.12 An FS-F-3252, "Material Evaluation Form (MEF)," shall be completed to determine if the waste is RCRA or non-RCRA. The packaging operation may not be started before the characterization is completed and an MEF is assigned by WC in accordance with EW-0001. Any Waste Acceptance Criteria (WAC) for which compliance cannot be verified by Sampling and Analysis shall be addressed in the Task Order. Activities needed to bring the waste into WAC compliance (i.e. decant liquid, use additional absorbant, packaging limitations, and etc.) shall be described in the Task Order.

SUBJECT EXPERT: Robert P. Giessl — Robert P Giessl

CHECKER: Shane E. Stierhoff — (for)

FUNCTIONAL AREA MANAGER: Michael L. West — MLWest

FUNCTIONAL AREA: Waste Programs Management

OTHER AFFECTED FERMCO DIVISION(s): [x] YES [ ]

Construction, RSO

EFFECTIVE DATE: 06-19-95

FS-F-4096 (02/09/95)

7.1.3 Visually check waste for free liquid (including ice).

a. If free liquid is present, notify supervisor for disposition before continuing procedure.

OR

b. If free liquid is not present, continue procedure.

Performance/Quality Assurance

7.1.4 Perform periodic surveillances of waste per applicable department procedures.

7.2 PREPARING AN EMPTY ISO CONTAINER

Waste Generator

7.2.1 Notify Container Distribution Facility (CDF) when containers are needed. Include an FS-F-3468, "FEMP Container Request" (Attachment D), signed by the Control Account Manager (CAM).

Container Distribution Facility

7.2.2 Visually inspect containers following PT-0003 before distributing.

LLW Packaging Support

7.2.3 Request container transfer to waste loading site.

7.2.4 Visually inspect interior and exterior of container for damage, such as corrosion/rust, hole, leak, breach, or dent per Tables 1, 2, and 3.

a. If the container is damaged, inform supervisor to contact the CDF for disposition.

OR

b. If the container is not damaged, continue procedure.

NOTE: ISO containers will be sealed by the supplier as of June, 1995. If old ISO containers are to be used that are not sealed by the supplier, preparation instructions will be provided by LLW Packaging Support.

7.2.5 Visually inspect interior of container to ensure the container is empty except for 2 layers of absorbent material and plywood used to go over absorbent material and protect the sides of the containers.

a. If other material is present or if plywood and absorbent material is not present, notify supervisor for disposition before continuing procedure.

OR

b. If other material is not present, continue procedure.

7.2.6 Verify that the ISO has an inventory number on a bar code on the side of the container (see Attachment E). If it does not, notify CDF before continuing procedure.

7.2.7 Spread two layers of absorbent pads on container floor, permitting no gaps and allowing padding to extend 3 inches (±1 inch) upward along each wall.

NOTE: Doorway edge shall remain free of padding at this time.

Packager

7.2.8 Starting at the back of container, place plywood sheets over the pads, overlapping, across the container floor to the doorway.

7.2.9 Lean three plywood sheets along each container side and one plywood sheet along the back wall.

7.2.10 Adhere a "Prohibited Materials" list and a "Process Area Scrap Checklist" (when applicable) to interior side of door.

7.2.11 Inform supervisor the container preparation is complete.

Supervisor

7.2.12 Notify P/QA that the container has been prepared.

Performance/Quality Assurance

7.2.13 Inspect container preparation per applicable department procedure for compliance with this procedure.

NOTE: Only periodic inspections of container preparation required for areas pre-approved by P/QA.

7.3 FILLING THE ISO CONTAINER WITH WASTE MATERIAL

LLW Packaging Support

7.3.1 Maintain communication with P/QA to permit P/QA to view filling of containers in accordance with applicable department procedure.

Performance/Quality Assurance

7.3.2 Check for nonconformance and do one of the following:

a. If a nonconformance is identified, document and evaluate for corrective action per applicable procedure and notify supervisor to have nonconformance corrected.

OR

b. If nonconformance is not identified, continue procedure.

Packager

WARNING

A RESPIRATOR AND OTHER PERSONAL PROTECTIVE EQUIPMENT, SPECIFIED IN THE HEALTH AND SAFETY PLAN AND PROVIDED BY THE SUPERVISOR, SHALL BE DONNED PRIOR TO FILLING CONTAINERS TO PREVENT INHALATIONS AND EXPOSURES.

NOTE: Any waste encountered in the packaging operation not covered by the MEF or that does not meet either the "Process Area Scrap Checklist" or Material Evaluation and Container Information - Scrap Vehicle" requirements shall be set aside and shall not be packaged without the Supervisor contacting WC for disposition instructions.

7.3.3 Load waste into container as tightly as possible ensuring the container is within the specified weight and freeboard limitations (see Table 4) and the load is balanced to prevent tipping. Aggregate material shall be carefully loaded to minimize damage, settling, and shifting during transportation.

NOTE: To allow for ice build-up in winter, maximum weight for shipments is 40,000 pounds if shipped between November and March and 42,000 pounds if shipped between April and October.

7.3.4 Complete either a "Materials Evaluation and Container Information - Scrap Vehicle" form (Attachment C) per PT-0011 or a "Process Area Scrap Checklist (Attachment B).

7.3.5 Initiate an FS-F-1945, "Item Production/Certification/Identification," 65 Card (Attachment F) per MCA-I-018, "Completing the Item Production/Certification/Identification Form."

7.3.6 Calculate tare weight by adding 325 pounds to the weight of the container.

7.3.7 Forward the 65 Card and the "Materials Evaluation and Container Information" form or the "Process Area Scrap Checklist" to LLW Packaging Support.

LLW Packaging Support

7.3.8 Review, sign, and send the 65 Card and the "Materials Evaluation & Container Information" form or the "Process Area Scrap Checklist" to MC&A.

7.4 SECURING THE ISO CONTAINER

Performance/Quality Assurance

7.4.1 Perform final examination of contents and complete documentation for verification of materials packaged.

NOTE: This documentation may include photographs.

Packager

7.4.2 If directed by supervisor, place two sheets of plywood vertically in front of container doorway for shoring.

7.4.3 Roll (double-thick) absorbent pads together and place evenly along the floor (maintaining continuous contact with floor) in front of the plywood sheets.

7.4.4 Caulk door frame interior and inside edges of each door.

7.4.5 Close the container doors.

7.4.6 Close and latch doors ensuring all latching mechanisms are engaged.

7.4.7 Band doors securely together with 1-1/4 inch bands spaced approximately 2 feet apart around the center locking bars at mid-height of the container.

CONTROL NO. ~~FA-0005~~

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INTERIM CHANGE TO A SITE PROCEDURE (ICP)

DATE: 10/24/95	PROCEDURE NO.: PT-0006	ICP NO.: IC 95-066
PROCEDURE TITLE: Packaging Low-Level Radioactive Waste (LLRW) in ISO Containers for Shipment to the Nevada Test Site		REV. NO.: 2
ICP TYPE: [X] PERMANENT [ ] TEMPORARY		EXPIRATION: N/A

JUSTIFICATION:

1. Improper Titles/Assignments in Procedure.

2. Reconfiguration of Plant 1 Pad.

AFFECTED PARAGRAPH(s):
7.5.1 Motor Vehicle Operator
7.5.2 Checker
7.5.3 Motor Vehicle Operator

EXISTING REQUIREMENT(s):

CHANGE(s):
7.5.1 Heavy Equipment Operator
7.5.2 Packager
7.5.3 Heavy Equipment Operator

SUBJECT EXPERT: [signature] CHECKER: [signature] (for GLH)

FUNCTIONAL AREA MANAGER: [signature]

FUNCTIONAL AREA: Packaging & Transportation

OTHER AFFECTED FERMCO DIVISION(s): [ ] YES [X] NO

EFFECTIVE DATE: 10/25/95

FS-F-4095 (02/09/95)

000688

7.4.8 Secure each band with two double-crimp seals.

LLW Packaging Support

7.4.9 Complete, sign, and distribute the "Process Area Scrap Checklist," if applicable.

7.4.10 Apply a tamper-proof red seal to door.

7.4.11 Notify MC&A and Transportation when container is full and is to be moved.

Supervisor

7.4.12 Specify the scale and the method of transporting the box to the scale.

Packager

7.4.13 Inspect the scale to be used per the applicable scale procedure.

7.5 WEIGHING THE FILLED ISO CONTAINER

Motor Vehicle Operator

7.5.1 Move container onto scale.

NOTE: The scale shall be a currently calibrated accountability scale.

Checker

7.5.2 Fill out weight ticket and transmit to LLW Packaging Support.

a. If box is over 42,000 pounds, notify supervisor and proceed as directed.

OR

b. If box is less than or equal to 42,000 pounds, continue procedure.

Motor Vehicle Operator

7.5.3 Remove container from the scale.

8.0 DRIVERS

8.1 NVO-325, Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements

8.2 S/RID 12, Packaging & Transportation

8.3 49 CFR, Section 173

9.0 DEFINITIONS

9.1 Free Liquid - Any free flowing liquid or any liquid that readily separates from the solid portion of a waste under ambient temperature and pressure conditions. Ice is also considered a free liquid.

9.2 Freeboard - The amount of allowable void space between packaged materials and the lid of the box.

9.3 ISO Container - An Intermodal container (Dry Cargo Type). Those used at the FEMP typically measure 8-1/2 feet high X 8 feet wide X 20 feet long with two doors on the end. Although frequently referred to as a "Sea/Land" container at the FEMP, an ISO container may be, but is not necessarily, a Sea/Land container. (See Table 4 for specifications.)

9.4 Low-Level Radioactive Waste (LLRW) - All radioactive waste not classified as high-level waste, spent nuclear fuel, Transuranic (TRU) waste, uranium mill tailings, or Mixed Waste (MW).

9.5 Resource Conservation and Recovery Act (RCRA) - The Congressional Act which established safe and environmentally acceptable management practices for specific wastes. RCRA requires strict "cradle to grave" control, documentation and proper management of hazardous wastes.

TABLE 1
CORROSION INSPECTION TYPES

TYPE	CHARACTERISTIC	COULD CAUSE LOSS OF BOX INTEGRITY		CORRECTIVE ACTION
		YES	NO	
1	Holes, large dents, or large areas of corrosion that affect the structural integrity of the container or require the entire side to be painted	X		1. Notify Maintenance to patch. Overpack or repackage in another container. **NOTE**: Supervisors ensure that touchup or painting is completed. 2. Notify P/QA and MC&A of all repairs or repackaging of waste containers.
2	Heavy rust with areas of pitted metal flaking and no holes present		X	1. HAZWATS scrape loose oxides and paint the area to be repaired.
3	Light surface rust with no pitting of the base metal		X	1. Wipe with masoline cloth or wash with soap and water, if needed to remove dirt. 2. Ship as is.

TABLE 2
LEAKER INSPECTION TYPES

TYPE	CHARACTERISTIC	CORRECTIVE ACTION
1	Material flowing from container and accumulation on, under, or around container.	1. Notify supervisor and Radiological Control (RC). 2. Supervisor notify AEDO. 3. Stop or contain leak as directed by supervisor. 4. Record on inspection form [illegible] container requires mitigation within 24 hours. 5. Complete additional cleanup as necessary. 6. Supervisor initiate an Occurrence Report (OR).
2	Material on container exterior only; no material on, under, or around container.	1. Record leak on inspection form. 2. Notify supervisor and RC. 3. Supervisor initiate an OR. 4. Supervisor review the completed inspection forms to prioritize containers for transfer to overpack staging area and subsequent mitigation.
3	Container exterior discolored/visible contamination; no material release.	1. Record condition on inspection form. 2. Notify supervisor and RC. 3. Supervisor schedule container for overpacking.

TABLE 3
DENT/BULGE INSPECTION TYPES

TYPE	CHARACTERISTIC	CORRECTIVE ACTION
1	Dents and/or bulges affecting container integrity to the degree of potential or actual release	Overpack or transfer to new container.
2	Dents and/or bulges not affecting container integrity	Continue to monitor.

TABLE 4
WEIGHT AND FREEBOARD LIMITATIONS

CODE	SHIPPING CONTAINERS	TARE WT (LBS)	WT LIMIT (LBS)
109	Sea/Land - Conventional No. 102"H x 96"W x 238"L Exterior 93"H x 94"W x 232"L Interior	VARIED	42,000 or full

ATTACHMENT A - PROHIBITED MATERIALS

PACKAGING GUIDELINES FOR WASTE GENERATOR	
Package has been properly prepared for closing when the following conditions exist:	
No liquids of any kind have been placed in container.	
Heavy/bulky items have been secured within container.	
All available space has been utilized efficiently.	
Prohibited materials (listed below) have been excluded.	
Packaging has not been damaged during loading.	
Liner is in place and properly lapped and sealed.	
PROHIBITED MATERIALS AND EXAMPLES	
Compressed Gases	*Corrosive Materials*
unpuctured aerosol cans	*acid or caustic material*
gas cylinders with valves or plugs in place	*acidic*
Free Liquids	*Hazardous Waste*
water, ice, seepage, condensation,	*solvents, petroleum products,*
drinks, coffee, juices, pop, soaked rags,	*lead, mercury, batteries,*
fuel, oil, fluids, solvents, etc.	*pesticides, etc.*
Etiologic Agents	*Explosives*
medical waste	

ATTACHMENT B - PROCESS AREA SCRAP CHECKLIST

SECTION I - WASTE EVALUATION	Yes	No	N/A
1.0 Free Liquids: 1.1 Any free liquids entrapped in nooks, crannies or folds? 1.2 Did the item contain internal (working) fluids? 1.3 Have internal fluids been drained? 1.4 Has item been tagged "drained?"			
2.0 Electrical Equipment: 2.1 Any light ballasts on the item? 2.2 Any starter caps on the item? 2.3 Any mercury switches on the item? 2.4 Any capacitors bigger than 5 inches in diameter on the item?			
3.0 Excess Residues: 3.1 Any residues on item that could be removed and managed separately? 3.2 Any soils on item that could be removed and managed separately?			
4.0 Painted Material: 4.1 Metal item < 1/8" thick AND more than 10% painted w/ lead-based paint? 4.2 Wood item < 1" thick AND more than 10% painted w/ lead-based paint?			
5.0 Restrictions on Material Type: 5.1 Is the material itself made of lead (Pb)? 5.2 Is the material itself uranium (U) or thorium (Th) metal?			
6.0 Glass: 6.1 Any light bulbs or lamps other than incandescent? 6.2 If sample jars, any material remaining in container?			
7.0 Trash: 7.1 Are there any prohibited items as listed in the posted "prohibited items" list?			
8.0 Property: 8.1 Has all property been administratively processed for disposal as LLW?			

SECTION II - CONTAINER INFORMATION

1. MATERIAL ORIGIN/DESCRIPTION (Provide a detailed description of the materials in the container, including source or origin if available)

2. PACKAGING START DATE:	3. PACKAGING END DATE:	4. INCHES FREEBOARD/HEADSPACE
5. CONTAINER NUMBER:	6. CONTAINER TYPE: ☐ S/L ☐ WM8 ☐ Drum ☐ OTHER, Specify:	
7. APPROVED BY: Supervisor(s) Signature/Date		8. ACCEPTED BY: WPM Signature/Date

GENERATOR TO MAKE DISTRIBUTION:		
1	White	Waste Characterization
2	Blue	Low-Level Waste Handling and Disposal
3	Yellow	Materials Control and Accountability
4	Green	Waste Generator

CONTROL NO. ~~PA-0003~~ 329

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INTERIM CHANGE TO A SITE PROCEDURE (ICP)

DATE: June 16, 1995	PROCEDURE NO.: PT-0006	ICP NO.: IC95-044
PROCEDURE TITLE: Packaging LLRW in Metal Boxes for Shipment to the NTS		REV. NO.: 2
ICP TYPE: [x] PERMANENT [ ] TEMPORARY		EXPIRATION:

JUSTIFICATION: Give proper direction for checklist form use

AFFECTED PARAGRAPH(s): Attachment B

EXISTING REQUIREMENT(s): Attachment B

CHANGE(s):

This is an **EXAMPLE** of the checklist to be used.

Refer to 20-C-625, "Evaluating LLRW Bulk Waste Streams for Shipment" or PT-0011 (same title), which will supersede 20-C-625, for the current checklist.

SUBJECT EXPERT: Robert P. Giessl *Robert P Giessl*	CHECKER: Jeffery G. Rowe *JRowe*

FUNCTIONAL AREA MANAGER: Michael L. West *MLWest*

FUNCTIONAL AREA: Waste Programs Management

OTHER AFFECTED FERMCO DIVISION(s): [x] YES [ ] Construction

EFFECTIVE DATE: 06-19-95

FS-F-4095 (02/09/95)

ATTACHMENT C - MATERIALS EVALUATION AND CONTAINER INFORMATION - SCRAP VEHICLE

SECTION I - WASTE EVALUATION

	YES	NO	N/A
1. Free from the following fluids: a. Anti-freeze			
b. Brake fluid			
c. Gasoline			
e. Engine oil			
f. Power steering			
g. Differential fluid (rear end)			
h. Windshield Wiper Fluid			
2. Removed: a. Radios			
b. Distributor coils and amplifiers			
c. Alternators			
d. Electronic fuel injector circuit			
Fuel tank removed			
4. Propane tank removed			
5. Tires Deflated			
6. Tire valve stem removed			
7. Freon pumped/contained for recycling			
8. Auxiliary Hydraulic Unit removed or drained			
9. Oil filter and Gas filter removed and filter receptacles on engine sealed			
10. Batteries removed			
11. All Hoses that contain liquids have been cut and Drained			

SECTION II - CONTAINER INFORMATION

1. MATERIAL ORIGIN/DESCRIPTION (Provide a complete description of the waste in the container, including information on source or origin if available): _____

SPECIFIC DISCERNIBLE ITEMS APPROVED AS LLRW (NON-RCRA) BY WASTE CHARACTERIZATION: _____

WASTE CHARACTERIZATION SIGNATURE/DATE

2. PACKAGING START DATE: _____ PACKAGING FINISH DATE: _____	3. VERIFIED BY: _____ DATE: _____
4. CONTAINER NUMBER:	5. CONTAINER TYPE:
6. LOCATION PACKAGED:	
7. *MEF NUMBER:	8. INCHES FREEBOARD/HEADSPACE
PROVED BY: _____ SUPERVISOR(S) SIGNATURE/DATE	APPROVED BY: _____ QC SIGNATURE/DATE

*materials packaged that do not meet the criteria in Section I, but have an approved MEF number, record the MEF number and material packaged.

GENERATOR TO DISTRIBUTE

1	White	Waste Characterization	2	Blue	Low-level Waste Handling & Disposal	3	Yellow	Material Control & Accountability	4	Green	Waste Generator

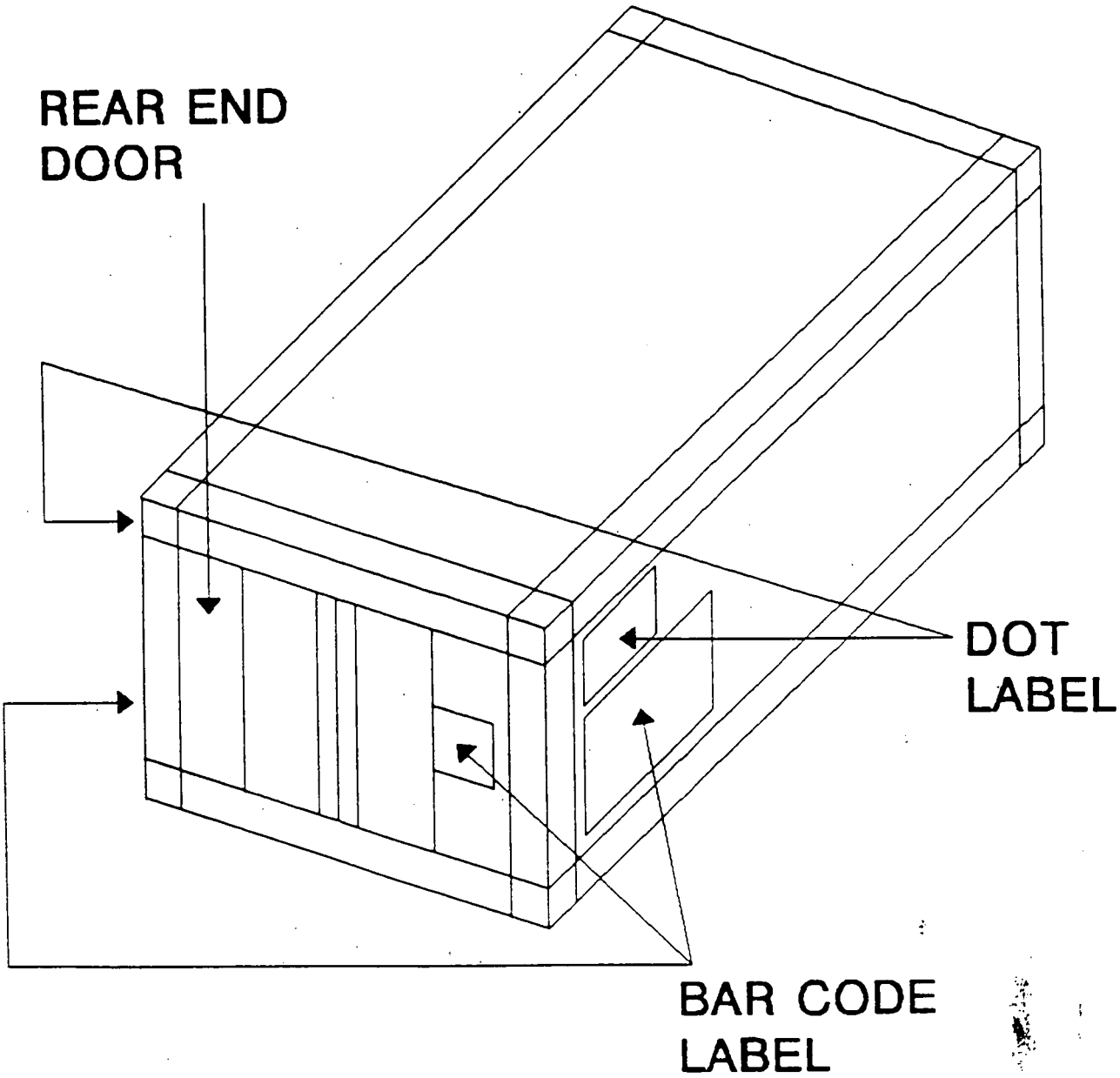
FS-F3472 (REV. 12/17/93)

ATTACHMENT D - FERNALD SITE CONTAINER REQUEST

Requisition No:

REQUESTED BY:				PHONE NUMBER	MAIL STOP	BADGE NUMBER	
PROJECT							
REQUEST DATE				CONTROL ACCOUNT NUMBER			
CONTAINER TYPE							
ISO	LWMB	SWMB	30 DRUM	55 DRUM	85 DRUM	110 DRUM	ROLL-OFF
QUANTITY REQUESTED							
TO BE SHIPPED TO NTS? YES___ NO___				FOR ONSITE STORAGE? YES___ NO___			
LOCATION FOR DELIVERY:							
CONTACT NAME:				PHONE:	RADIO:		
DELIVERY DATE REQUIRED:				MEF NUMBER			
MATERIAL DESCRIPTION/PWID							
DELIVERY DATE	QUANTITY			DELIVERY DATE	QUANTITY		
SIGNATURES REQUIRED							
CONTROL ACCOUNT MANAGER (REQUIRED)				DATE:			
COMMENTS:							

ATTACHMENT E - ISO LABELING LOCATIONS



ATTACHMENT F - ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION
FS-F-1945

CARD 65-1 ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION

DIV. NO.

P.O. NO.	SOURCE	CLASS	MATERIAL TYPE	LOT REQUEST NO.	DATE	SHIFT			
SEAL NUMBER		SEAL DATE		PACKAGE PHYSICAL CHARACTERISTICS			PLANT	PROD. MBA	MODELNO
		MONTH	DAY	YEAR	TIB	NO			
				EMPTY CONTAINER AT START			SCAN	SUBV. NO.	GROSS WEIGHT
WASTE DESCRIPTION AND CONDITIONS				EMPTY SEALED OR EMPTY					
				MATERIAL IS AS CODED					
PACKAGE TYPE				PROHIBITED MATERIALS					
PACKAGE SIZE				LIQUIDS IN CONTAINER					TARE WEIGHT
PROJECT				MINIMUM OF VOID SPACE					
				PACKAGE SECURED					
				DRAIN PLUG SECURED					
				OVERPACK					NET WEIGHT
				SURPACK					

OPERATOR SIGNATURE SUPERVISOR SIGNATURE DATE

TB-3-1946-1 (REV.11/29/93)

Attachment J.4.30
FERMCO Site Procedure PT-0007 (Rev. 2)
Packaging Low-Level Radioactive Waste (LLRW) in Metal Boxes for Shipment to the Nevada Test Site

CONTROL NUMBER: ~~FGR 0076~~
SITE PROCEDURE PT-0007 (SSOP-0079)
REVISION NO. 2

329

PACKAGING LOW-LEVEL RADIOACTIVE WASTE (LLRW) IN METAL BOXES FOR SHIPMENT TO THE NEVADA TEST SITE

NON-CONTROLLED COPY

Effective Date: 03-30-95

Originator (Subject Expert): Robert P Grieal 3/15/95
Date

Checker Concurrence: Robert A. [illegible] 3/16/95
Date

APPROVED BY: M West
Mike West, FAM of Packaging and Transportation 3/16/95
Date

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Fernald Environmental Restoration Management Corporation
P. O. Box 538704
Cincinnati, Ohio 45253-8704

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ISSUE AND REVISION SUMMARY

Revision	Date	Description of Issue or Revision
0	12-14-92	Separate procedure written for packaging LLRW in boxes per Request No. S92-176, initiated by M. Hundley. SSOP-0079, SSOP-0078, and SSOP-0075 replace SSOP-0024.
1	10-04-04	Major revision required to update tables, Figure 3, and organization names and add labeling requirement per Request No. S93-073, initiated by Lori Hurst. This revision supersedes SSOP-0079, dated 12-14-92, Rev. 0.
2	03-30-95	Major Revision to omit the labeling, marking, and inspecting sections; add requirements for top-loading boxes; add requirements for packaging regulated asbestos containing materials; and outline the latest responsibility changes per Request No. S94-174, initiated by B. Giessl. This document replaces SSOP-0079, dated 10-04-94, Rev. 1.

1.0 PURPOSE

1.1 This procedure provides the instructions for packaging low-level radioactive waste (LLRW) in metal boxes for shipment offsite from the Fernald Environmental Management Project (FEMP).

2.0 SCOPE

2.1 The procedure outlines the steps for (1) inspecting the waste to be packaged, (2) inspecting and preparing empty boxes, (3) filling boxes with waste, (4) weighing filled boxes, and (5) securing the boxes.

2.2 The packaging operation is applicable to FEMP personnel (including subcontractors) responsible for packaging LLRW in metal boxes at any packaging location of the FEMP site.

3.0 REFERENCES

3.1 EW-0001, Completing the Material Evaluation Form

3.2 EW-0006, Management of Excess Soil, Debris, and Waste from a Project

3.3 PT-0003, Control and Movement of Containers at the FEMP

3.4 PT-0011, Evaluating Low-level Radioactive Waste (LLRW) Bulk Waste Streams for Shipment

3.5 MCA-I-018, Completing the Item Production/Certification/Identification Form

4.0 RESPONSIBILITIES

4.1 Packager inspects waste and containers and packages waste per this procedure. Complies with any additional requirements specified by Safety and Health (S&H).

4.2 LLW Packaging Support ensures the box is empty and in acceptable condition before packaging. Ensures contents of waste package. Coordinates the movement of containers.

4.3 Waste Characterization (WC) provides documentation supporting characterization of all LLRW packaged under this procedure.

4.4 Materials Control and Accountability (MC&A) provides bar code labels. Maintains records and inventory of metal boxes. Tracks movement of empty and full containers.

4.5 Safety and Health (S&H) provides a Radiological Control Technician (RCT), as requested. Determines appropriate respiratory equipment and any other employee protection.

4.6 Supervisor of the Waste Generation Area specifies applicable scale procedures and standard tare weight of packages. Ensures packaging materials are available for Packagers. Ensures that only trained personnel package waste material. Ensures that personnel who package waste for shipment follow applicable Nevada Test Site (NTS) criteria and Department of Transportation (DOT) and Environmental Protection Agency (EPA) regulations. Contacts Safety and Health (S&H) to determine the appropriate respiratory protection for the process being performed and the radiological surveys required for materials moving in and out of contamination areas. Contacts Radiological Control (RC) for a Radiological Work Permit (RWP) or other safety permits and ensures permits are obtained and signed prior to performing. Provides packagers with the required respiratory protection and other personal protective equipment. Ensures the lid on an unfilled box is secured after packaging so unknown materials are not added. Ensures waste packages are weather-protected.

4.7 Motor Vehicle Operator (MVO) delivers empty boxes to designated packaging location. Supports packager as needed per this procedure.

4.8 Performance/Quality Assurance (P/QA) overviews packaging operation to ensure compliance with this procedure.

5.0 GENERAL

5.1 Any circumstance that could have resulted in an intake of radioactive materials by inhalation, ingestion, or absorption shall be immediately reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake to the S&H RC Department for evaluation. When the suspect isotope is uranium, the involved employees shall report to the Urine Sampling Station at the end of their respective shift to complete an FS-F-1458, "Investigation Report" (IR), and submit an incident urine sample. The involved employees shall also report to the Urine Sampling Station at the start of their next shift to submit a follow-up urine sample. When the suspect isotope is other than uranium, the involved employee(s) shall report to the Dosimetry Section of RC for further determination of actions. Employees are responsible for complying with appropriate requirements as specified by the authorized S&H staff.

5.2 For Waste Stream ONL0000000002 Contaminated Construction/Removal, the following substitutions should be made:

- WC may be performed using EW-0006, "Management of Excess Soil, Debris, and Waste from a Project."
- A Packager could be a subcontractor or FEMP personnel.
- A Supervisor could be the Construction Coordinator if a project is subcontracted.

5.3 DOT label letters shall be 2 inches high by 1/4 inch wide.

6.0 PREREQUISITES

6.1 Safety glasses with side shields shall be worn unless other eye protection is specified.

6.2 Respiratory protection provided by the supervisor shall be worn when required.

6.3 Gloves shall be worn when handling boxes, operating equipment, and handling rough, sharp-edged, or contaminated material.

6.4 Neoprene rubber gloves shall be worn when handling hazardous chemical substances where skin contact is possible.

6.5 Vacuum cleaners with HEPA type filters or a current DOP test label properly affixed to vacuum shall be used for cleaning.

6.6 An RWP must be approved and current.

6.7 Face shields shall be worn when removing lids or bungs of containers filled with liquids or during operations where personnel could be splashed with liquids.

6.8 Containers with unknown contents shall be labelled "UNKNOWN" (with the current date). Empty containers shall be marked "EMPTY."

6.9 Access to the container storage area will be secured and the container will be labeled as required in 40 CFR 61.149 (c) (5) (iii) and 40 CFR 61.149 (d) (1) (i), (ii), and (iii) when packaging Regulated Asbestos Containing Materials (RACMs).

6.10 Obtain the following materials and tools, as needed, before packaging:

- Appropriate safety protective equipment
- Foam-strip gasket (size appropriate for box)
- Diatomaceous earth
- Indelible marker
- Black paint, red paint, white paint (as applicable)
- Hammer and screw driver, as applicable
- Wrench and channel locks, as applicable
- Clear lab label tape and dispenser
- Clean rags
- Electric drill
- Impact wrench
- Absorbent pads

6.11 "Prohibited Materials" list (Attachment A) shall be displayed in the packaging area or on the container.

6.12 The "Process Area Scrap Checklist" (Attachment B) shall be displayed in the packaging area or on the container when packaging Waste Stream ONL0000000001 Process Area Scrap.

6.13 An FS-F-3252, "Material Evaluation Form (MEF)," shall be completed to determine if the waste is RCRA or non-RCRA. The packaging operation may not be started before the characterization is completed and an MEF is assigned by WC in accordance with EW-0001.

6.14 A minimum of two personnel are required to package waste.

6.15 Packagers shall be qualified in use of Personal Protective Equipment (PPE).

6.16 Employees shall be briefed on and sign the RWP in black ink before performing work.

7.0 PROCEDURE

7.1 INSPECTING WASTE

Packager

7.1.1 Ensure the waste to be packaged is not on the "Prohibited Materials" list (Attachment A) and can pass either the "Process Area Scrap Checklist" (Attachment B) or the "Material Evaluation and Container Information - Scrap Vehicle" (Attachment C), when applicable.

a. If the waste is on the Prohibited Materials List or does not pass the "Process Area Scrap Checklist" or the "Material Evaluation and Container Information - Scrap Vehicle," notify supervisor for disposition before continuing procedure.

OR

b. If the waste is not on the Prohibited Materials List and passes either the "Process Area Scrap Checklist" or the "Material Evaluation and Container Information - Scrap Vehicle," continue procedure.

NOTE: The determination to package a waste stream is based on a completed MEF.

7.1.2 Ensure the waste characterization has been completed and an MEF has been obtained from WC.

a. If the waste characterization has been completed, package it per this procedure.

OR

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CONTROL NO. ~~FA 0003~~ 329

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INTERIM CHANGE TO A SITE PROCEDURE (ICP)

DATE: May 26, 1995	PROCEDURE NO.: PT-0007	ICP NO.: IC95-033
PROCEDURE TITLE: Packaging LLRW in Metal Boxes for Shipment to the NTS		REV. NO.: 2
ICP TYPE: [x] PERMANENT [ ] TEMPORARY		EXPIRATION:

JUSTIFICATION: Ensure all Waste Acceptance Criteria are addressed

AFFECTED PARAGRAPH(s): 6.13

EXISTING REQUIREMENT(s):

6.13 An FS-F-3252, "Material Evaluation Form (MEF)," shall be completed to determine if the waste is RCRA or non-RCRA. The packaging operation may not be started before the characterization is completed and an MEF is assigned by WC in accordance with EW-0001.

CHANGE(s):

6.13 An FS-F-3252, "Material Evaluation Form (MEF)," shall be completed to determine if the waste is RCRA or non-RCRA. The packaging operation may not be started before the characterization is completed and an MEF is assigned by WC in accordance with EW-0001. Any Waste Acceptance Criteria (WAC) for which compliance cannot be verified by Sampling and Analysis shall be addressed in the Task Order. Activities needed to bring the waste into WAC compliance (i.e. decant liquid, use additional absorbant, packaging limitations, and etc.) shall be described in the Task Order.

SUBJECT EXPERT: Robert P. Giessl	CHECKER: Shane E. Stierhoff
Robert P Giessl	(for)

FUNCTIONAL AREA MANAGER: Michael L. West MLWest.

FUNCTIONAL AREA: Waste Programs Management

OTHER AFFECTED FERMCO DIVISION(s): [x] YES [ ]

Construction, RSO

EFFECTIVE DATE: 06-19-95

FS-F-4095 (02/09/95)

000709

b. If the waste characterization has not been completed, inform Supervisor to contact WC for disposition before continuing procedure.

7.1.3 Visually check waste for free liquid (including ice).

a. If free liquid is present, notify supervisor for disposition before continuing procedure.

OR

b. If free liquid is not present, continue procedure.

Performance/Quality Assurance

7.1.4 Perform periodic surveillance of waste per applicable department procedure.

7.2 PREPARING AN EMPTY, SMALL METAL BOX

Waste Generator

7.2.1 Notify Container Distribution Facility (CDF) when containers are needed. Include an FS-F-3468, "Fernald Site Container Request" (Attachment D), signed by the Control Account Manager (CAM).

Container Distribution

7.2.2 Visually inspect container following PT-0003 before distributing.

LLW Packaging Support

7.2.3 Request container transfer to the waste loading site.

7.2.4 Verify that the interior of the box is empty and there is no interior or exterior damage such as corrosion, leaks, and dents/bulges per Tables 1, 2, and 3.

a. If the box is damaged or material is present, inform supervisor to contact the CDF for disposition before continuing procedure.

OR

b. If the box is not damaged and material is not present, continue procedure.

7.2.5 Verify the box has an inventory number on a bar code on the side of the box (Attachment E).

7.2.6 If the bottom of the box has a drain plug, ensure plug is securely in place.

Supervisor

7.2.7 Specify the scale for weighing and method of transporting the box to the scale.

NOTE: The scale shall be a currently calibrated accountability scale.

Packager

7.2.8 Inspect the scale to be used per the scale procedure applicable to the area.

Motor Vehicle Operator/Packager

7.2.9 As directed, move the box onto the scale.

NOTE: Packagers may move any container within the capacity of a forklift; Motor Vehicle Operators shall move anything greater than the capacity of a forklift.

Packager

7.2.10 Tare weigh box per the scale procedure applicable to the area.

7.2.11 Record the weight of the box on the upper front side of the box with indelible ink or paint so that it can be covered by the bar code.

Motor Vehicle Operator/Packager

7.2.12 Remove the box from the scale.

Packager

7.2.13 Remove lid and place in a designated location to prevent damage.

7.2.14 Do one of the following:

a. For concrete or materials with sharp edges, do one the following:

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~~FA 0003~~

329

INTERIM CHANGE TO A SITE PROCEDURE (ICP)

DATE: April 12, 1995	PROCEDURE NO.: PT-0007	ICP NO.: ICP-005
PROCEDURE TITLE: Packaging LLRW in Metal Boxes for Off-Site Shipment		REV. NO.: 2
ICP TYPE: [x] PERMANENT [ ] TEMPORARY		EXPIRATION:
JUSTIFICATION: Clarify wording		
AFFECTED PARAGRAPH(s): REPLACE STEP 7.2.14 ON PAGES 8 AND 9 WITH THE FOLLOWING:		

EXISTING REQUIREMENT(s):

7.2.14 Do one of the following:

a. For concrete or materials with sharp edges, do one of the following:

(1) Place one layer of pallets (provided by LLW Packaging Support) in the bottom of the box and then pour 1/2 to 1 inch of diatomaceous earth evenly over the pallets.

OR

(2) Place one layer of absorbent material in the bottom of the box and cover with one layer of pallets.

OR

b. If loading soil, wood, or drummed materials, place one layer of absorbent pads in the bottom of the box and pour 1 to 2 inches of diatomaceous earth evenly in the bottom of the box.

NOTE: Pallets are not required when loading soil, wood or drummed materials.

CHANGE(s):

7.2.14 Determine if the waste form has the potential for damaging the container (i.e., dents and/or punctures) during loading. If yes, provide protection to the container bottom before loading waste.

NOTE: Packaging protection is required when loading broken concrete or large pieces of metal or equipment with sharp edges that could puncture the container bottom. Package protection is not required when loading less dense materials such as soil, wood, or drummed materials.

NOTE: Package protection can be achieved by using soft material such as wood pallets or plywood to cushion the waste from coming in contact with and damaging the container floor. Careful handling of the waste while loading the container is also acceptable. Compliance with this requirement is demonstrated by the absence of dents and punctures in the final package.

7.2.15 Place, at a minimum, one layer of absorbent pads per box or pour 1 to 2 inches of diatomaceous earth evenly over the bottom of the box. Add additional absorbent material or alternative absorbents when directed by the task order or other work plans controlling the packaging operation.

NOTE: When packaging material with a high moisture content (e.g., sump cakes), additional absorbent material is required. The amount of absorbent will be based on the potential free liquid in the waste. This potential free liquid estimate must be carefully considered in order to adequately determine the volume of absorbent required to contain the liquid.

SUBJECT EXPERT: Robert P Grind	CHECKER:

FUNCTIONAL AREA MANAGER: Robert A Hunt

FUNCTIONAL AREA: Packaging and Transportation

OTHER AFFECTED FERMCO DIVISION(s): [x] YES [ ]

Construction

EFFECTIVE DATE: April 18, 1995

FS-F-4095 (02/09/95)

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CONTROL NO. ~~FA-0003~~ 329

INTERIM CHANGE TO A SITE PROCEDURE (ICP)

DATE: 11/14/95	PROCEDURE NO.: PT-0007	ICP NO.: 95-071
PROCEDURE TITLE: Packaging LLRW in Metal Boxes for Shipment to the Nevada Test Site		REV. NO.: 2
ICP TYPE: [X] PERMANENT [ ] TEMPORARY		EXPIRATION:

JUSTIFICATION: To use new metal boxes for shipments to the NTS.

AFFECTED PARAGRAPH(s): 7.2.14, Page 9

EXISTING REQUIREMENT(s):

Adding Note

CHANGE(s):

Note: When packaging material in WMB's container code 104 (Table 4) Absorbant pads, diatomaceous earth, or pallet are not required.

SUBJECT EXPERT: [signature] CHECKER: [signature]

FUNCTIONAL AREA MANAGER: [signature]

FUNCTIONAL AREA: Packaging and Transportation

OTHER AFFECTED FERMCO DIVISION(s): [X] YES [ ]

Construction

EFFECTIVE DATE: 11/15/95

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(1) Place one layer of pallets (provided by LLW Packaging Support) in the bottom of the box and then pour 1/2 to 1 inch of diatomaceous earth evenly over the pallets.

OR

(2) Place one layer of absorbent material in the bottom of the box and cover with one layer of pallets.

OR

b. If loading soil, wood, or drummed materials, place one layer of absorbent pads in the bottom of the box and pour 1 to 2 inches of diatomaceous earth evenly in the bottom of the box.

NOTE: Pallets are not required when loading soil, wood or drummed materials.

7.3 PREPARING AN EMPTY, TOP-LOADING METAL BOX

Waste Generator

7.3.1 Notify Container Distribution Facility (CDF) when containers are needed. Include an FS-F-3468, "FEMP Container Request," signed by the Control Account Manager (CAM).

Container Distribution Facility

7.3.2 Visually inspect container following PT-0003 before distributing.

LLW Packaging Support

7.3.3 Request container transfer to the waste loading site.

7.3.4 Verify that the interior of the box is empty and there is no interior or exterior damage such as corrosion, leaks, and dents/bulges per Tables 1, 2, and 3.

a. If the box is damaged or material is present, inform supervisor to contact the CDF for disposition before continuing procedure.

OR

b. If the box is not damaged and material is not present, continue procedure.

7.3.5 Verify the box has an inventory number on a bar code on the side of the box (Attachment F).

Packager

7.3.6 Place one layer of pallets (provided by LLW Packaging Support) in the bottom of the box.

7.3.7 Place one layer of absorbent material in the bottom of the box.

Supervisor

7.3.8 Notify P/QA that the container has been prepared.

Performance/Quality Assurance

7.3.9 Inspect container preparation per applicable department procedure for compliance with this procedure.

NOTE: Only periodic inspections of container preparation are required for areas pre-approved by P/QA.

7.4 FILLING THE BOX WITH WASTE MATERIAL

Performance/Quality Assurance

7.4.1 Overview filling of boxes per applicable department procedure to ensure compliance with this procedure.

Packager

WARNING

A RESPIRATOR AND OTHER PERSONAL PROTECTIVE EQUIPMENT, SPECIFIED IN THE HEALTH AND SAFETY PLAN AND PROVIDED BY THE SUPERVISOR, SHALL BE DONNED PRIOR TO FILLING CONTAINERS TO PREVENT INHALATIONS AND EXPOSURES.

NOTE: Any waste encountered in the packaging operation not covered by the MEF or that does not meet either the "Process Area Scrap Checklist" or Material Evaluation and Container Information - Scrap Vehicle" requirements shall be set aside and shall not be packaged without the Supervisor contacting WC for disposition instructions.

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INTERIM CHANGE TO A SITE PROCEDURE (ICP)

FH-0003

329

DATE: April 18, 1995	PROCEDURE NO.: PT-0007	ICP NO.: ICP-003
PROCEDURE TITLE: Packaging LLRW in Metal Boxes for Off-Site Shipment		REV. NO.: 2
ICP TYPE: [x] PERMANENT [ ] TEMPORARY		EXPIRATION:

JUSTIFICATION: Reword to include plywood along with wood pallets.

AFFECTED PARAGRAPH(s): REPLACE STEP 7.3.6 ON PAGE 10 WITH THE FOLLOWING:

EXISTING REQUIREMENT(s):

7.3.6 Place one layer of pallets (provided by LLW Packaging Support) in the bottom of the box.

CHANGE(s):

7.3.6 Place one layer of pallets (or its equivalent with concurrence by LLW Packaging Support) in the bottom of the box. (These materials are needed to prevent damage to the bottom and are dependent on the waste to be packaged and the method of packaging.)

SUBJECT EXPERT: Robert P Grind

CHECKER: Mr S. Mitchell

FUNCTIONAL AREA MANAGER: Robert A. Hunt

FUNCTIONAL AREA: WASTE Packaging & Transportation

OTHER AFFECTED FERMCO DIVISION(s): [x] YES [ ]

Construction

EFFECTIVE DATE: April 18, 1995

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INTERIM CHANGE TO A SITE PROCEDURE (ICP)

~~FA-0003~~ 329

DATE: April 18, 1995	PROCEDURE NO.: PT-0007	ICP NO.: ICP-004
PROCEDURE TITLE: Packaging LLRW in Metal Boxes for Off-Site Shipment		REV. NO.: 2
ICP TYPE: [x] PERMANENT [ ] TEMPORARY		EXPIRATION:

JUSTIFICATION: Clarify wording

AFFECTED PARAGRAPH(s): REPLACE THE NOTE BETWEEN STEPS 7.4.2 AND 7.4.3 WITH THE FOLLOWING

EXISTING REQUIREMENT(s):

NOTE: To allow for ice build-up in winter, maximum weight for shipments is 40,000 pounds if shipped between November and March and 42,000 pounds if shipped between April and October.

CHANGE(s):

NOTE: To allow for ice build-up in transit in winter, maximum weight for shipments is 40,000 pounds if shipped between November and March and 42,000 pounds if shipped between April and October. Containers exceeding these limits can be approved on a case-by-case basis with concurrence from the Traffic Department.

SUBJECT EXPERT: Robert P Gimel

CHECKER: [illegible]

FUNCTIONAL AREA MANAGER: [illegible]

FUNCTIONAL AREA: Waste Packaging and Transportation

OTHER AFFECTED FERMCO DIVISION(s): [x] YES [ ]

Construction

EFFECTIVE DATE: April 18, 1995

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7.4.2 Load waste into box as tightly as possible ensuring the box is within the specified weight and freeboard limitations (see Table 4) and the load is balanced to prevent tipping. Aggregate material shall be carefully loaded to minimize damage, settling, and shifting during transportation.

NOTE: To allow for ice build-up in winter, maximum weight for shipments is 40,000 pounds if shipped between November and March and 42,000 pounds if shipped between April and October.

7.4.3 Using a clean rag, wipe top edge of box. Place rag in disposal container.

7.4.4 Peel protective paper from foam-strip gasket and carefully apply gasket to box edge and/or the underside channel of the lid.

7.4.5 Place lid on box and secure as directed by supervisor.

7.4.6 Complete either a "Materials Evaluation and Container Information - Scrap Vehicle" form (Attachment C) or a "Process Area Scrap Checklist" (Attachment B) per PT-0011.

7.4.7 Complete a Form FS-F-1945, "Item Production/Certification/Identification," 65 Card (Attachment G) for each box following MCA-I-018, "Completing the Item Production/Certification/Identification Form."

NOTE: Tare weight for the large top-loaders is embossed in the top corner of the box.

LLW PACKAGING SUPPORT

7.4.8 Apply tamper-proof red seal to container.

7.4.9 Notify supervisor that the box is ready to be weighed.

7.5 WEIGHING THE FILLED BOX

Supervisor

7.5.1 Specify the scale and the method of transporting the box to the scale.

Packager

7.5.2 Inspect the scale to be used per the applicable scale procedure.

Motor Vehicle Operator

7.5.3 Move the box onto the scale.

Packager

7.5.4 Using the applicable scale procedure, weigh the box including box pins and other hardware to obtain gross weight.

a. If the box is over the specified weight limit (see Table 4), notify supervisor for disposition.

<u>OR</u>

b. If the box is within weight limit, continue procedure.

7.5.5 Do one of the following:

a. For a box requiring temporary storage, do the following:

(1) Apply a tamper-proof seal, lock, and other device to secure lid and prevent unauthorized additions.

LLW Packaging Support

(2) Notify MC&A and Transportation that container is full and ready to be moved.

<u>OR</u>

b. For a box not requiring temporary storage, continue procedure.

Packager

7.5.6 Using indelible ink, mark the gross weight, shipping number, and serial number on the upper front side of the box so the markings can be covered by the bar code label when provided.

7.5.7 Remove box from scale.

7.5.8 Record the weight on the 65 Card.

7.5.9 Send 65 Card and any applicable form(s) to supervisor.

Supervisor

7.5.10 Sign 65 Card indicating accuracy and completeness.

CONTROL NO. ~~FA-0003~~

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INTERIM CHANGE TO A SITE PROCEDURE (ICP)

329

DATE: September 5, 1995	PROCEDURE NO.: PT-0007	ICP NO.: IC95-057
PROCEDURE TITLE: Packaging Low Level Radioactive Waste (LLRW) in Metal Boxes for Shipment to the Nevada Test Site		REV. NO.: 2
ICP TYPE: [X] PERMANENT [ ] TEMPORARY		EXPIRATION:

JUSTIFICATION:
This ICP provides alternative acceptable disposition options for white metal boxes that exceed maximum weight limits provided in Table 4 of PT-0007, Rev. 2. These limits represent safe-lifting capacities of standard fork-trucks used in waste packaging and shipping operations. Exceeding these limits up to 9,000 lb.s do not impact NVO-325 requirements or invalidate container integrity testing. Overweight containers, however, require use of specialized equipment for safe movement and loading. This ICP will serve as a control measure in managing overweight white metal box containers in shipments offered for certification.

AFFECTED PARAGRAPH(s):
Step 7.5.4.a

EXISTING REQUIREMENT(s):
"If the box is over the specified weight limit (see Table 4), notify supervisor for disposition."

CHANGE(s):
Add note prior to Step 7.5.4.a as follows:

NOTE: Repackaging, or removal of material from the overweight container, is the preferred disposition option to maintain compliance with safe lifting limits for standard fork-trucks. If repackaging of material is not feasible or impacts the FEMP ALARA concept, the supervisor may use specialized equipment (i.e., fork-trucks with rated capacities in excess of 8,000 pounds) for container movement. The overweight container may be loaded "as-is", using the specialized equipment, if the total shipment weight is less than 42,000 pounds. The overweight container may also be overpacked within an ISO container, provided that waste stream material compatibility is maintained for the overpack container. In addition, the supervisor can initiate a Task Order that provides a safe alternative method of managing the overweight container.

SUBJECT EXPERT: Robert P Guerl | CHECKER: Robert A Hunt

FUNCTIONAL AREA MANAGER: M West

FUNCTIONAL AREA: WASTE PACKAGING AND TRANSPORTATION

OTHER AFFECTED FERMCO DIVISION(s): [X] YES [ ]
Remedial Support Operations
QA
Construction

EFFECTIVE DATE: September 5, 1995

FS-F-4095 (02/09/95)

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CONTROL NO. ~~FA-0005~~

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INTERIM CHANGE TO A SITE PROCEDURE (ICP)

329

DATE: 10/24/95	PROCEDURE NO.: PT-0007	ICP NO.: IC 95-067
PROCEDURE TITLE: Packaging Low-Level Radioactive Waste (LLRW) in Metal Boxes For Shipment to the Nevada Test Site		REV. NO.: 2
ICP TYPE: [X] PERMANENT [ ] TEMPORARY		EXPIRATION: N/A

JUSTIFICATION:

Improper Titles/Assignment in Procedure.

AFFECTED PARAGRAPH(s):

7.5.3 Motor Vehicle Operator

EXISTING REQUIREMENT(s):

CHANGE(s):

7.5.3 Heavy Equipment Operator

SUBJECT EXPERT: [signature]

CHECKER: [signature] (for GLA)

FUNCTIONAL AREA MANAGER: [signature]

FUNCTIONAL AREA:

OTHER AFFECTED FERMCO DIVISION(s): [ ] YES [X] NO

EFFECTIVE DATE: 10/25/95

FS-F-4095 (02/09/95)

7.5.11 Complete and sign the appropriate form(s).

7.5.12 Forward 65 Card and the appropriate form(s) to LLW Packaging Support.

LLW Packaging Support

7.5.13 Review, sign, and distribute the 65 Card and the appropriate form(s).

Materials Control & Accountability/Shipment Coordinator

7.5.14 Print required bar code labels and submit to supervisor.

8.0 DRIVERS

8.1 NVO-325, "Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements"

8.2 S/RID 12, Packaging & Transportation

8.3 49 CFR, Section 173

9.0 DEFINITIONS

Free Liquid - Any free flowing liquid or liquid that readily separates from the solid portion of a waste under ambient temperature and pressure conditions. Ice is also considered a free liquid.

Freeboard - The amount of allowable void space between packaged materials and the lid of the box.

Low-Level Radioactive Waste (LLRW) - All radioactive waste not classified as high-level waste, spent nuclear fuel, Transuranic (TRU) waste, uranium mill tailings, or Mixed Waste (MW).

Resource Conservation and Recovery Act (RCRA) - The Congressional Act which established safe and environmentally acceptable management practices for specific wastes. RCRA requires strict "cradle to grave" control, documentation, and proper management of hazardous wastes.

White Metal Boxes (WMB) - Bulk containers with a net capacity greater than 452 liters and less than 3,000 liters that meet HM-181 test standards. (See Table 4 for specification of each type.)

TABLE 1
CORROSION INSPECTION TYPES

TYPE	CHARACTERISTIC	COULD CAUSE LOSS OF BOX INTEGRITY		CORRECTIVE ACTION
		YES	NO	
1	Holes, large dents, or large areas of corrosion that affect the structural integrity of the container or require the entire drum to be painted	X		1. Notify Maintenance to patch. Overpack or repackage in another container. **NOTE**: Supervisors ensure that touchup or painting is completed. 2. Notify P/QA and MC&A of all repairs or repackaging of waste containers.
2	Heavy rust with areas of pitted metal flaking and no holes present		X	1. HAZWATS scrape loose oxides and paint the area to be repaired.
3	Light surface rust with no pitting of the base metal		X	1. Wipe with masoline cloth or wash with soap and water, if needed to remove dirt. 2. Ship as is.

TABLE 2
LEAKER INSPECTION TYPES

TYPE	CHARACTERISTIC	CORRECTIVE ACTION
1	Material flowing from container and accumulation on, under, or around container	1. Notify supervisor and Radiological Control (RC). 2. Supervisor notifies AEDO. 3. Stop or contain leak at the discretion of the supervisor. 4. Record on inspection form that the container requires mitigation within 24 hours. 5. Complete additional cleanup as necessary. 6. Supervisor initiate an Occurrence Report (OR).
2	Material on container exterior only; no material on, under, or around container	1. Record leak on inspection form. 2. Notify Supervisor and RC. 3. Supervisor shall initiate an OR. 4. Supervisor shall review the completed inspection forms to prioritize containers for transfer to overpack staging area and subsequent mitigation.
3	Container exterior discolored/visible contamination; no material release	1. Record condition on inspection form. 2. Notify Supervisor and RC. 3. Supervisor schedule container for overpacking.

TABLE 3
DENT/BULGE INSPECTION TYPES

TYPE	CHARACTERISTIC	CORRECTIVE ACTION
1	Dents and/or bulges affecting container integrity to the degree of potential or actual release	Overpack or transfer to new container.
2	Dents and/or bulges not affecting container integrity	Continue to monitor.

TABLE 4
WEIGHT AND FREEBOARD LIMITATIONS

CODE	SHIPPING CONTAINERS	TARE WT (LBS)	WT LIMIT (LBS)
113	WMB - Pin Type No. 30A-5500-M-00059, Rev. 0 43"H x 53"W x 77"L Exterior 38"H x 52"W x 76"L Interior	630	6000 or no more than 3" freeboard
117	WMB - Clip Type Electropanel No. 89DW000800, Rev. 1 41"H x 54"W x 78"L Exterior 37"H x 48"W x 72"L Interior	680	6000 or no more than 3" freeboard
119	WMB - Bolt Type No. C01-542-2-01 40.5"H x 57.25"W x 81.25"L Ext 32"H x 52"W x 76"L Interior	850	8000 or no more than 3" freeboard
117	WMB - Bolt Type (Carolina) No. PT188-93 42"H x 55"W x 80"L Exterior 37"H x 50"W x 75"L Interior	~900	8000 or no more than 3" freeboard
117	WMB - Bolt Type (Galbreath) No. IS1503 41 13/16"H x 55.5"W x 80"L Ext 37"H x 51.5"W x 74.5"L Interior	~900	8000 or no more than 3" freeboard
120	Top Load No. 40X-5500-M-00041, Rev. 1 89"H x 96"W x 240"L Exterior	VARIED	42,000 or full
121	Top Load No. 94"H x 96"W x 240"L Exterior 88"H x 92"W x 236"L Interior	VARIED	42,000 or full

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INTERIM CHANGE TO A SITE PROCEDURE (ICP)

DATE: 11/14/95	PROCEDURE NO.: PT-0007	ICP NO.: 95-070
PROCEDURE TITLE: Packaging LLRW In Metal Boxes for Shipment to the Nevada Test Site		REV. NO.: 2
ICP TYPE: [X] PERMANENT [ ] TEMPORARY		EXPIRATION:

JUSTIFICATION: To use new metal boxes for shipments to NTS.

AFFECTED PARAGRAPH(s): Table 4, Page 17

EXISTING REQUIREMENT(s):
Table 4

CHANGE(s): Add the following:

	Lbs.	WT Limit
Code 104 WMB (CGR) Half-Height Box, No. C-95-100 REVA 2'H x 4' W x 7'L Exterior 20"H x 46"W x 82"L Interior	693	9110
Code 107 WMB (CGR) Full-Height Box, No. C-95-100 REVA 4'H x 4'W x 7'L Exterior 44"H x 46"W x 82"L Interior	909	9260

SUBJECT EXPERT: [signature] CHECKER: [signature]

FUNCTIONAL AREA MANAGER: [signature]

FUNCTIONAL AREA: Packaging and Transportation

OTHER AFFECTED FERMCO DIVISION(s): [X] YES [ ]

Construction

EFFECTIVE DATE: 11/15/95

FS-F-4095 (02/09/85)

CONTROL NO. RM-0003 ~~FER0003~~

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INTERIM CHANGE TO A SITE PROCEDURE (ICP)

DATE: 02-12-96	PROCEDURE NO.: PT-0007	ICP NO.: IC96-017

PROCEDURE TITLE: Packaging LLRW in Metal Boxes for Shipment to Nevada Test Site

REV. NO.: 2

ICP TYPE: [X] PERMANENT [ ] TEMPORARY

EXPIRATION:

JUSTIFICATION:

Obtained new forktrucks which increase lifting capabilities

AFFECTED PARAGRAPH(s):

Table 4 Weight and Freeboard Limitations

EXISTING REQUIREMENT(s):

Table 4 Weight and Freeboard Limitations

CHANGE(s):

	Tare Wt. (lbs)	Wt. Limit (lbs)
Code 130 - WMB - Seal Loc Clips (Container Products) No. 4371092/4426927 42.5"H x 53"W x 79.25"L Ext. 38"H x 52"W x 76"L Interior	720	9,000 or no more than 3" freeboard

SUBJECT EXPERT: Shane Stierhoff

CHECKER:

FUNCTIONAL AREA MANAGER: Michael L. West

FUNCTIONAL AREA: Waste Programs Management

OTHER AFFECTED FERMCO DIVISION(s): [X] YES [ ]

EFFECTIVE DATE: February 12, 1996

FS-F-4095 (02/09/95)

CHANGES AND ADDITIONS TO:

PROCEDURE NO.: PT-0007

PROCEDURE TITLE: PACKAGING LLRW IN METAL BOXES FOR SHIPMENT TO NEVADA TEST SITE

REV. NO.: 2

ICP TYPE: [ ] PERMANENT [ ] TEMPORARY

CHANGES:

		Tare Wt (lbs)	Wt Limit (lbs)
Code 119	WMB - Bolt Type No. C01-542-2-01 40.5"H x 57.25"W x 81.25"L Exterior 32"H x 52"W x 76" L Interior	850	9,000 or no more than 3" freeboard
Code 117	WMB - Bolt Type (Carolina) No. PT-188-93 42"H x 55"W x 80"L Exterior 37"H x 50"W x 75"L Interior	~900	9,000 or no more than 3" freeboard
Code 117	WMB - Bolt Type (Galbreath) No. 151503 41-13/16"H x 55.5"W x 80"L Enterior 37"H x 51.5"W x 74.5"L Interior	~900	9,000 [illegible] more th[illegible]3" freeboard

ADDITIONS:

		Tare Weight	Weight Limit
Code 131	Metal Box - Bolt Type (Thorium Overpack) Drawing C-150-F 45.45"H x 55.5"W x 83"L Enterior 41"H x 52"W x 79"L Interior	~900	9,000
Code 132	Metal Box - Supercompactor Drawing SUP-50001-A 52.5"H x 46.75"W x 74"L Exterior 47.07"H x 42.25"W x 69.5"L Interior	1360	9,000
Code 133	Top Load Container 108"H x 96"W x 238"L Exterior 88"H x 94"W x 232"L Interior	Varied	42,000

ATTACHMENT A - PROHIBITED MATERIALS

PACKAGING GUIDELINES FOR WASTE GENERATOR	
Package has been properly prepared for closing when the following conditions exist:	
No liquids of any kind have been placed in container.	
Heavy/bulky items have been secured within container.	
All available space has been utilized efficiently.	
Prohibited materials (listed below) have been excluded.	
Packaging has not been damaged during loading.	
Liner is in place and properly lapped and sealed.	
PROHIBITED MATERIALS AND EXAMPLES	
Compressed Gases	*Corrosive Materials*
unpuctured aerosol cans	*acid or caustic material*
gas cylinders with valves or plugs in place	*acidic*
Free Liquids	*Hazardous Waste*
water, ice, seepage, condensation,	*solvents, petroleum products,*
drinks, coffee, juices, pop, soaked rags,	*lead, mercury, batteries,*
fuel, oil, fluids, solvents, etc.	*pesticides, etc.*
Etiologic Agents	*Explosives*
medical waste	

ATTACHMENT B - PROCESS AREA SCRAP CHECKLIST

SECTION I - WASTE EVALUATION	Yes	No	N/A
1.0 Free Liquids: 1.1 Any free liquids entrapped in nooks, crannies, or folds? 1.2 Did the item contain internal (working) fluids? 1.3 Have internal fluids been drained? 1.4 Has item been tagged "drained?"			
2.0 Electrical Equipment: 2.1 Any light ballasts on the item? 2.2 Any starter caps on the item? 2.3 Any mercury switches on the item? 2.4 Any capacitors bigger than 5 inches in diameter on the item?			
3.0 Excess Residues: 3.1 Any residues on item that could be removed and managed separately? 3.2 Any soils on item that could be removed and managed separately?			
4.0 Painted Material: 4.1 Metal item < 1/8" thick AND more than 10% painted w/ lead-based paint? 4.2 Wood item < 1" thick AND more than 10% painted w/ lead-based paint?			
5.0 Restrictions on Material Type: 5.1 Is the material itself made of lead (Pb)? 5.2 Is the material itself uranium (U) or thorium (Th) metal?			
6.0 Glass: 6.1 Any light bulbs or lamps other than incandescent? 6.2 If sample jars, any material remaining in container?			
7.0 Trash: 7.1 Are there any prohibited items as listed in the posted "prohibited items" list?			
8.0 Property: 8.1 Has all property been administratively processed for disposal as LLW?			

SECTION II - CONTAINER INFORMATION

1. MATERIAL ORIGIN/DESCRIPTION (Provide a detailed description of the materials in the container, including source or origin if available)

2. PACKAGING START DATE:	3. PACKAGING END DATE:	4. INCHES FREEBOARD/HEADSPACE
5. CONTAINER NUMBER:	6. CONTAINER TYPE: ☐ S/L ☐ WMB ☐ Drum ☐ OTHER, Specify:	
7. APPROVED BY: Supervisor(s) Signature/Date		8. ACCEPTED BY: WPM Signature/Date

GENERATOR TO MAKE DISTRIBUTION:		
1	White	Waste Characterization
2	Blue	Low-Level Waste Handling and Disposal
3	Yellow	Materials Control and Accountability
4	Green	Waste Generator

CONTROL NO. ~~FA-0003~~

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INTERIM CHANGE TO A SITE PROCEDURE (ICP)

DATE: June 16, 1995	PROCEDURE NO.: PT-0007	ICP NO.: IC95-045
PROCEDURE TITLE: Packaging LLRW in ISO Containers for Shipment to the NTS		REV. NO.: 2
ICP TYPE: [x] PERMANENT [ ] TEMPORARY		EXPIRATION:

JUSTIFICATION: Give proper direction for checklist form use

AFFECTED PARAGRAPH(s): Attachment B

EXISTING REQUIREMENT(s): Attachment B

CHANGE(s):

This is an **EXAMPLE** of the checklist to be used.

Refer to 20-C-625, "Evaluating LLRW Bulk Waste Streams for Shipment" or PT-0011 (same title), which will supersede 20-C-625, for the current checklist.

SUBJECT EXPERT: Robert P. Giessl *Robert P Giessl*	CHECKER: Jeffrey G. Rowe *J Rowe*

FUNCTIONAL AREA MANAGER: Michael L.West *M West*

FUNCTIONAL AREA: Waste Programs Management

OTHER AFFECTED FERMCO DIVISION(s): [x] YES [ ] Construction

EFFECTIVE DATE: 06-19-95

FS-F-4095 (02/09/95)

ATTACHMENT C - MATERIALS EVALUATION AND CONTAINER INFORMATION - SCRAP VEHICLE

SECTION I - WASTE EVALUATION

	YES	NO	N/A
1. Free from the following fluids: a. Anti-freeze			
b. Brake fluid			
c. Gasoline			
e. Engine oil			
f. Power steering			
g. Differential fluid (rear end)			
h. Windshield Wiper Fluid			
2. Removed: a. Radios			
b. Distributor coils and amplifiers			
c. Alternators			
d. Electronic fuel injector circuit			
uel tank removed			
4. Propane tank removed			
5. Tires Deflated			
6. Tire valve stem removed			
7. Freon pumped/contained for recycling			
8. Auxiliary Hydraulic Unit removed or drained			
9. Oil filter and Gas filter removed and filter receptacles on engine sealed			
10. Batteries removed			
11. All hoses that contain liquids have been cut and drained			

SECTION II - CONTAINER INFORMATION

1. MATERIAL ORIGIN/DESCRIPTION (Provide a complete description of the waste in the container, including information on source or origin if available): _____

SPECIFIC DISCERNIBLE ITEMS APPROVED AS LLRW (NON-RCRA) BY WASTE CHARACTERIZATION: _____

WASTE CHARACTERIZATION SIGNATURE/DATE

2. PACKAGING START DATE: _____ PACKAGING FINISH DATE: _____	3. VERIFIED BY _____ DATE: _____
4. CONTAINER NUMBER:	5. CONTAINER TYPE:
6. LOCATION PACKAGED:	
7. *MEF NUMBER:	8. INCHES FREEBOARD/HEADSPACE:
PROVED BY: _____ SUPERVISOR/ST SIGNATURE/DATE	APPROVED BY _____ QC SIGNATURE/DATE

*Waste packaged that do not meet the criteria in Section I, but have an approved MEF number, record the MEF number and material packaged.

GENERATOR TO DISTRIBUTE

1	White	Waste Characterization	2	Blue	Low-level Waste Handling & Disposal	3	Yellow	Material Control & Accountability	4	Green	Waste Generator

FS-F-3472 (REV. 12/17/93)

ATTACHMENT D - FERNALD SITE CONTAINER REQUEST

Requisition No:

REQUESTED BY:				PHONE NUMBER	MAIL STOP	BADGE NUMBER	
PROJECT							
REQUEST DATE				CONTROL ACCOUNT NUMBER			
CONTAINER TYPE							
ISO	LWMB	SWMB	30 DRUM	55 DRUM	85 DRUM	110 DRUM	ROLL-OFF
QUANTITY REQUESTED							
TO BE SHIPPED TO NTS? YES___ NO__				FOR ONSITE STORAGE? YES___ NO___			
LOCATION FOR DELIVERY:							
CONTACT NAME:				PHONE:	RADIO:		
DELIVERY DATE REQUIRED:				MEF NUMBER			
MATERIAL DESCRIPTION/PWID							

DELIVERY DATE	QUANTITY	DELIVERY DATE	QUANTITY

SIGNATURES REQUIRED	
CONTROL ACCOUNT MANAGER (REQUIRED)	DATE:
COMMENTS:	

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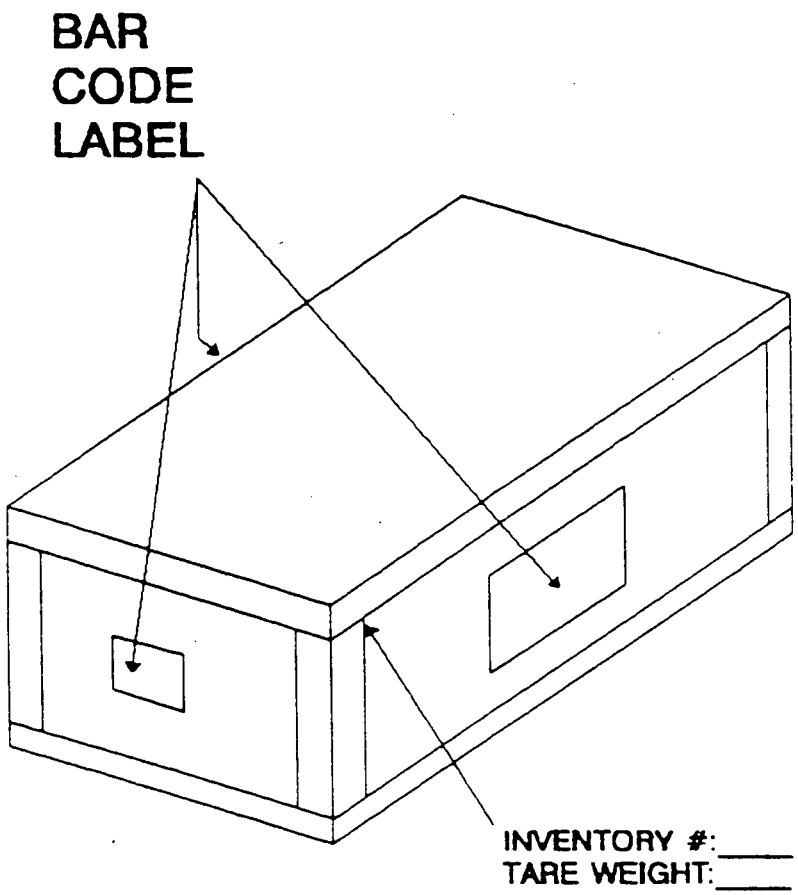
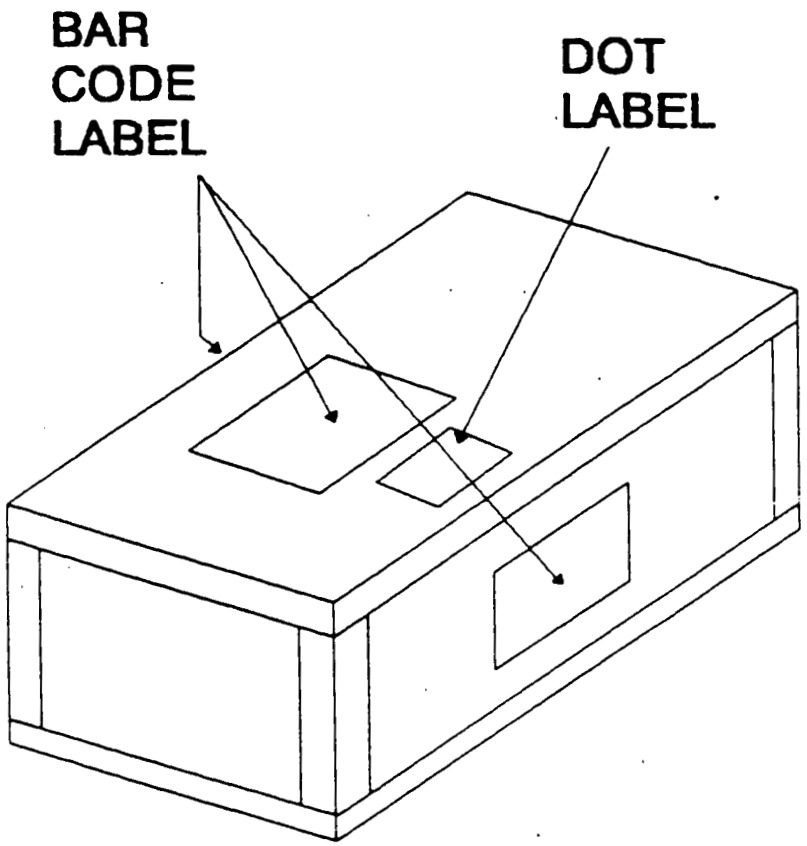
ATTACHMENT E - TOP-LOADING BOX LABELING



ATTACHMENT F - LLRW BOX LABELING



ATTACHMENT G - ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION

CARD 65-1 ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION

										DIV. NO.:
P.O. NO.	SOURCE	CLASS	MATERIAL TYPE	LOT SEQUENCE NO.	DATE	SHIFT	BADGE NO.	CONT. NO.	SERIAL NO.	
SEAL NUMBER		SEAL DATE		PACKAGE PHYSICAL CERTIFICATION		PLANT	PROD. MGR.	MOD.NO		
	MONTH	DAY	YEAR	TB	NO					
				EMPTY CONTAINER AT START		SCAN	SURV. NO.	GROSS WEIGHT		
WASTE DESCRIPTION AND COMMENTS				SOIL BOLED OR EMPTY						
				MATERIAL IS AS CODED						
PACKAGE TYPE				PROHIBITED MATERIALS						
PACKAGE SIZE				LIQUIDS IN CONTAINER				TARE WEIGHT		
PROJECT				MINIMUM OF VOID SPACE						
				PACKAGE SECURED						
				DRAIN PLUG SECURED						
				OVERPACK				NET WEIGHT		
				SURFACE						

OPERATOR SIGNATURE SUPERVISOR SIGNATURE DATE

[redacted]

Attachment J.4.31

FERMCO Engineering Procedure 12-6003 (Rev. 0)

Startup and System Operability Test Procedure

ENGINEERING PROCEDURE
DOCUMENT NO. 12-6003
REVISION NO. 0

STARTUP AND SYSTEM OPERABILITY

TEST PROCEDURE

12-6003

Effective Date: June 10, 1994

AUTHORIZED BY: Robert P. Heck, III 6/16/94
R. P. Heck, Vice President Engineering Date

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Fernald Environmental Restoration Management Corporation
P. O. Box 538704
Cincinnati, Ohio 45253-8704

Fernald Environmental FERMCO Restoration Management Corporation	Title: **STARTUP AND SYSTEM OPERABILITY TEST PROCEDURE**	
	DOCUMENT NO: 12-6003 REVISION NO: 0	
	Effective Date: 06-10-94	Page 1 of 12

This procedure supersedes ENG-02-1803 "Startup and System Operability Test Procedure".

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Fernald Environmental FERMCO Restoration Management Corporation	Title: STARTUP AND SYSTEM OPERABILITY TEST PROCEDURE	
	DOCUMENT NO: 12-6003 REVISION NO: 0	
	Effective Date: 06-10-94	Page 2 of 12

This procedure supersedes ENG-02-1803 "Startup and System Operability Test Procedure".

RECORD OF ISSUE/REVISIONS

DATE	REV. NO	DESCRIPTION AND AUTHORITY
11-15-93	A	New document to describe how Startup and Systems Operability Test will be performed per Request No. S93-290, initiated by Erick Reynolds.
06-10-94	0	Revised document to describe how Startup and Systems Operability Test will be performed. Initiated by Joe Cupo.

	Title: STARTUP AND SYSTEM OPERABILITY TEST PROCEDURE	
Fernald Environmental FERMCO Restoration Management Corporation	DOCUMENT NO: 12-6003 REVISION NO: 0	
	Effective Date: 06-10-94	Page 3 of 12

This procedure supersedes ENG-02-1803 "Startup and System Operability Test Procedure".

1.0 PURPOSE

To establish the process by which facilities and their respective systems are (1) prepared for operations (Startup) and (2) subjected to System Operability (SO) Testing after construction has been completed.

2.0 SCOPE

This procedure applies to any project which has systems, subsystems, or components which must undergo Startup and SO Testing. The complexity of the systems, safety factors, and potential risks involved will determine the level of the startup activities required. Site personnel that will utilize this procedure include the following:

a. The Engineering Division's Operational Readiness and Startup group responsible for providing technical support to the CRU or RSO executing the startup activities.

b. The CRU management and personnel responsible for planning and design of facilities, and for executing the startup activities.

c. The RSO representatives responsible for providing operation and maintenance support of the CRU designed facilities and RSO owned facilities.

d. Construction management responsible for completing construction, punch listing the job for completion, and for system turnover for Startup and SO Testing.

e. Sitewide personnel responsible for reviewing startup activities, including Quality Assurance, Environmental Safety & Health, and Technology Programs.

3.0 DEFINITIONS

System - An assortment of process equipment which has been assembled to perform specific functions during operations.

System Operability (SO) Testing - Tests imposed on a system to verify the following:

- That performance of the system meets design requirements.
- The optimum operating parameters of the systems.
- Any problems that may adversely affect operational reliability of the system.

3.0 **DEFINITIONS** (cont.)

Startup - Activities associated with planning and preparing a facility and its systems for operations including the following:

- Developing a Startup Plan that identifies all activities necessary to start up a facility for operations.
- SO Testing.

Startup Activities - Those activities which include the following:

- Preparation and approval of plans, specifications, and procedures for testing and startup of the project.
- Initiating modifications to the facility that are identified as necessary before full operation.
- Preparation and approval of the instructional materials for operational and maintenance needs.
- Supporting the classroom and On-the-Job Training (OJT).
- Ensuring that the Operational Readiness of a facility meets FEMP requirements.
- Gathering and turning over to Operations and Maintenance all project vendor submittals of parts lists, recommended spares, drawings, and manuals for installation, maintenance and operation of project's equipment. These items should be turned over by Construction after Construction Acceptance Test (CAT).
- Environmental Compliance Testing.
- Incorporating all requirements into operating procedures (TSRs, permit restrictions, lessons learned and conduct of operations).

4.0 **RESPONSIBILITIES**

Project Engineer (PE)

- Provide technical support and engineering operational consistency to the project.
- Manages the project and ensures Startup and SO Testing are executed in accordance with site standards and procedures.

This procedure supersedes ENG-02-1803 "Startup and System Operability Test Procedure".

4.0 **RESPONSIBILITIES** (cont.)

- Designated by the Operational Readiness and Startup (OR&S) manager and may be matrixed from the Engineering Division to the responsible division.

Test Coordinator (TC)

- Develops and executes the Startup Plan and provides technical assistance in support of the Startup operations.
- Provides documentation and technical support necessary to execute SO Testing of a system.

Operational Readiness and Startup (OR&S) Manager

- Provides technical support personnel, and procedures for operational readiness and startup of the project systems to the Engineering Manager, and to the Project Engineer.

Facility Owner (FO)

- Represents the owner of the system after startup is completed, and participates in the startup planning and execution.

5.0 **GENERAL**

5.1 STARTUP PLAN

The Startup Plan addresses the overall scheme for activation of a facility or system from the end of construction to final turnover to operations. The Startup Plan identifies the systems requiring the SO Testing, provides the schedule for testing, identifies the responsible personnel by name, and establishes lines of authority. It also provides a vehicle for obtaining Division Manager concurrence on schedule and manpower requirements.

5.2 GUIDANCE MANUAL

The Startup and SO Test Guidance Manual provides the "how to" for developing and executing a comprehensive Startup and SO Test program. Use of this manual assures that the test activities and generated documentation complies with current regulatory requirements. It also provides evidence that the system or component complies with the required criteria. This manual addresses the following subjects:

5.2 GUIDANCE MANUAL (cont'd)

1. STARTUP:

   a. Outline and Guidelines for developing the Startup Plan.

   b. System scoping for startup activities.

   c. Checklist of precautions to be considered before proceeding with the startup activities.

2. SO TESTING:

   a. Administrative guide for the SO Test program.

   b. Outlines for preparation of test plans, test procedures, and test specifications.

   c. Execution of the SO Test activities.

   d. Equipment calibration, grooming, and alignment in preparation for testing.

   e. Preparation and processing of test reports.

   f. Checklist of precautions and technical considerations that commonly apply to SO Testing. (TBD)

3. STARTUP AND SO TEST SUPPORT INTERFACES

   The following groups interface with the Startup and SO Test efforts of the OR&S group:

   a. Construction Division

      - Completes Construction Acceptance Testing (CAT)
      - Recommends Acceptance or Conditional Acceptance
      - Supports System Testing and Startup Activities
      - Interfaces with Vendor on behalf of startup and testing groups

   b. CRU - Owns the system to be tested, and provides overview of activities associated with the startup and SO Testing.

5.2 GUIDANCE MANUAL (cont'd)

c. RSO - Provide support personnel to the CRU for executing the startup and SO Test activities, and for operation and maintenance of the system once it is on line. RSO may also own the system and provide oversight.

d. Reviewing Organizations - Site-wide groups responsible for reviewing the startup and SO test documents for compliance.

6.0 PREREQUISITES

6.1 Construction acceptance or conditional acceptance (with punchlist of outstanding items for completion) of the system, in the case of facility modification or for new construction.

7.0 PROCEDURE

7.1 INITIATION OF STARTUP

CRU DIRECTOR

1. Notify the OR&S of a need to provide startup support.

   NOTE: This should be done early in the project so that the startup engineers are able to coordinate startup interface requirements with the Title II Design Engineers. At the very latest, the startup effort should be initiated in time to coordinate with the Construction Division for scheduling and tracking punchlist completion. This will allow the Startup plan and SO test documents to be developed prior to construction acceptance.

OR&S MANAGER

2. Coordinate closely with the Project Engineer, Construction Manager, and Project & Configuration Control representative for the project to establish the following:

   - Project schedules and budgets to be met by the Startup plan.
   - Personnel that will coordinate their activities with the Test Coordinator (TC).

7.1 INITIATION OF STARTUP (cont'd)

- Scope and complexity of testing required.

3. Appoint a Test Coordinator (TC) to manage the Startup technical support for the project, and identify the support team that will assist in developing the Startup Plan.

   NOTE: The Operational Readiness and Startup (OR&S) group manager oversees Startup activities (including SO Testing) for all projects.

7.2 STARTUP PLAN

STARTUP COORDINATOR AND SUPPORT TEAM

1. Develop the Startup Plan for the subject system.

   NOTE: The Startup and SO Test guidance manual identifies the recommended practices to be implemented for developing the startup plan.

2. Review SSOP-0100 "Readiness Review Process" to determine if an Operational Readiness Review (ORR), or a Operational Readiness Assessment (ORA) is required, for startup of the overall project, and prepare for the appropriate review in accordance with SSOP-0100.

3. As a minimum, route the Startup plan to the following groups for review and comment prior to implementation:

   - Project Engineer (PE)/Engineering Manager (EM)
   - Regulatory Programs
   - Environmental, Safety and Health
   - Quality Assurance
   - Remedial Support Operations/Facility Owner (FO)

7.2 STARTUP PLAN

4. Resolve comments with the respective reviewers, incorporate changes, and obtain reviewers' signature on comment sheets as approved.

   NOTE: Engineering Document Control should be utilized for transmitting and tracking the documents during this review cycle (refer to Engineering Procedure 12-5001 "Engineering Document Control").

5. Submit the completed Startup Plan to the Engineering Manager and Project Engineer for implementation.

6. For revisions to the Startup Plan, repeat steps 3 through 5.

7. Provide technical support, as required, to execute the Startup Plan. Typical activities include the following:

   a. Track the SO Test completion progress and work with the TCs to insure compliance with the overall Startup schedules.

   b. Notify the PM when the required degree of readiness is achieved.

   c. Provide necessary documentation.

   d Support the PM if requested during the ORR.

7.3 INITIATION OF SO TEST

PROJECT ENGINEER

1. When the startup plan is completed and approved notify the OR&S Manager of need to execute SO Testing to support Startup.

OR&S MANAGER

2. Appoint a Test Coordinator (TC) to develop the test documents and to be the technical lead in executing the SO Test activities for the system.

This procedure supersedes ENG-02-1803 "Startup and System Operability Test Procedure".

7.3 INITIATION OF SO TEST

TEST COORDINATOR (TC)

3. Coordinate closely with the Startup Coordinator and Project Engineer to establish the following:

   - Project schedules and budgets to be met by SO Testing.
   - Boundaries of the subject system.
   - Identification of personnel that will coordinate their activities with the TC.

7.4 SO TEST DOCUMENTS

TEST COORDINATOR

1. Develop the SO Test documents for the subject system.

   NOTE: Refer to the Startup and SO Test guidance manual.

   NOTE: The OR&S Manager is responsible for evaluating this review for the project as a whole, and should be consulted in this effort.

2. As a minimum, route the SO Test documents to the following groups for review and comment prior to executing the SO Test activities:

   - Project Engineer
   - Regulatory Programs
   - Environmental, Safety and Health
   - Quality Assurance
   - Remedial Support Operations/Facility Owner

3. Resolve comments with the respective reviewers, and incorporate any resulting changes into the appropriate documents.

   NOTE: Engineering Document Control should be utilized for transmitting and tracking the documents during this review cycle (refer to Engineering Procedure 12-5001, "Engineering Document Control").

This procedure supersedes ENG-02-1803 "Startup and System Operability Test Procedure".

7.4 SO TEST DOCUMENTS

4. Submit the completed SO Testing documents to the Project Engineer for implementation.

5. Provide copies of the completed SO Test documents to the OR&S Manager.

7.5 EXECUTION OF SO TESTING

PROJECT ENGINEER

1. Review the SO Test documents for required approvals prior to executing the SO Test activities.

2. Notify the support personnel that will be responsible for executing the SO Test activities under the technical direction of the Test Coordinator.

   NOTE: At this stage of the project, it is beneficial to involve the personnel that will be responsible for plant operations in the SO Test activities to provide optimal training and first-hand experience.

TEST COORDINATOR

3. Train the support personnel for executing the SO Test activities to be executed.

   NOTE: It is essential that any safety and health related hazards be identified, that the support personnel are advised of the hazards, and that appropriate safety precautions are implemented.

4. Execute the activities defined in the SO Test documents.

   NOTE: Refer to the Startup and SO Test Guidance Manual. Adequate test documentation is essential for auditability and validation of the Startup and SO Testing process.

5. Identify any unexpected results that may affect the operation of the system, and review them with the OR&S Manager.

6. Complete and assemble all required documentation of the SO Testing.

7.5 EXECUTION OF SO TESTING

OR&S MANAGER/TEST COORDINATOR

7. Resolve any technical issues that may affect operations, and perform additional testing if necessary to validate operability.

   NOTE: The Engineering Change Proposal procedure 12-5002 may be used if modifications to the design of the system are deemed necessary.

7.6 SO TEST DOCUMENTATION/TURNOVER

TEST COORDINATOR

1. Submit the completed documentation of the SO Test activities and results (identify any findings) to the CRU's Project Engineer, and to Engineering Document Control for filing.

PROJECT ENGINEER

2. Support ORRs prior to turnover for operations

3. Notify the Division Manager when the operational readiness of the facility is determined to be completed.

8.0 APPLICABLE DOCUMENTS

8.1 DRIVERS

- DOE Order 4700.1, "Project Management System"
- DOE Order 5480.31, "Startup and Restart of Nuclear Facilities"
- DOE Order 5700.6C, "Quality Assurance"

8.2 REFERENCES

- Startup and SO Test Guidance Manual
- SSOP-0100, "Readiness Review Process"
- Engineering Procedure 12-5001, "Engineering Document Control"
- Engineering Procedure 12-5002, "Engineering Change Proposal"
- SM-0005, "FERMCO Operational Readiness Manual"

Attachment J.4.32

FERMCO Requirements Manual for Startup and Turnover (RMP-0034, Rev. 0)

329

CONTROL NO. FER-0014
RM-0034
Effective Date: 12-19-95
Revision No. 0

STARTUP AND TURNOVER

REQUIREMENTS MANUAL

Authorized By: Robert P. Heck II — 12-18-95

R.P. HECK, VICE PRESIDENT — DATE
Environmental Engineering and Technology

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Fernald Environmental Restoration Management Corporation
P.O. Box 538704
Cincinnati, Ohio 45253-8704

RECORD OF ISSUE/REVISIONS

DATE	REV. NO.	DESCRIPTION AND AUTHORITY
12/19/95	0	New document to describe how startup and turnover processes will be performed. Initiated by Dexter Lunsford at request of Robert P. Heck, VP/EET.

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1.0 INTRODUCTION

1.1 General

The Fernald Environmental Management Project (FEMP) Startup and Turnover Manual has been developed to establish requirements for implementing procedures, plans, and manuals for the startup and turnover of non-nuclear and nuclear facilities.

This manual establishes the requirements and procedures applicable to activities performed by FEMP during the startup and turnover phases of a facility. This section follows the general document format outlined in MS-1002, Control of Plans and Internal Requirements Documents. (The purpose, scope, references, responsibilities, general, prerequisites, procedure, applicable documents, definitions and attachments define a formalized process by which a facility is to be prepared for startup or turnover). It is not the intent of this manual to address all detailed requirements or the processes associated with a project, but rather provide the Startup Manager with a summary of requirements which need to be addressed in order to startup or turnover a facility. It is pre-supposed that functional area requirements have been implemented through the Site Procedure Manuals, Volumes 1 thru 12. This being the case, functional area requirements are not included as requirements in this manual.

1.2 Purpose

This manual provides guidance for Fernald Environmental Management Project (FEMP) personnel responsible for the startup or turnover of non-nuclear and nuclear facilities and the systems and facilities that are directly required for their operation. It identifies and references requirements for these activities, and defines a formalized process for the startup or turnover of these facilities in a safe, efficient, effective, and regulatory compliant manner.

1.3 Scope

This manual defines a formalized process for startup or turnover of non-nuclear and nuclear facilities from the conceptual phase to startup/turnover authorization. This also includes activities to start a new facility, or to establish operations for an existing facility. This applies to any project that has been designated a project by EW-1001 and those designated projects by the Vice President, Environmental Engineering & Technology (VP-EET) and/or Executive Vice President (EVP). This includes the following phases:

1.0 INTRODUCTION (cont.)

1.3.1 Conceptual Phase - it is important that startup and turnover of facilities be considered during conceptual design in order to keep abreast of ergonomics, (human engineering) maintenance access, industrial and ALARA safety issues, operability, maintainability, construction, CAT/SOT interfaces, and SOP/SOT planning can be understood and considered during the development of the requirement.

1.3.2 Planning Phase - includes the development and approval of a Startup/Turnover Plan, which documents activities required for Startup or Turnover, including Startup/Turnover criteria, clean definition established between CAT and SOT activities, subcontractor oversight, document control.

1.3.3 Operational Readiness Phase - includes activities defined in the Startup/Turnover Plan that must be accomplished to establish a state of Operational Readiness in terms of facilities/hardware readiness, procedures/administrative controls readiness, and personnel readiness. This phase concludes the completion and verification of these activities and the Project Manager's declaration of Operational Readiness.

1.3.4 Startup/Turnover Authorization Phase - includes completion of the FEMP Readiness Reviews (ORRs, RAs, Pre-Opt Assessments) and closure of all Pre-Startup Punchlist items. The DOE Operational Readiness Review and other external oversight determinations of Operational Readiness are included in this phase. This phase concludes with the receipt of formal DOE authorization to startup or turnover.

These phases, and major activities associated with them, are depicted in schematic form in Attachment 8.1. A more detailed schematic of the Startup/Turnover Authorization phase is given in Attachment 8.2. The flowcharted process and activities are described in Paragraph 5.0 of this section.

1.4 Implementation

This manual applies to the startup or turnover of FEMP non-nuclear and nuclear facilities, including systems and facilities that are directly required for their operation, that are operated by FEMP. All of the requirements contained in this manual may not be applicable, or may be partially applicable in a manner utilizing a graded approach, based on the complexity of the facility or modifications, the facility hazard classification, the safety item classification and reasons for prior shutdown. The methodologies to be utilized by FEMP in applying the graded approach, as well as the final determination of applicability of requirements, shall be defined and justified in the Startup/Turnover Plan (See Attachment 8.4 for Plan Format and Guide). The following items will be addressed in a Project Startup and Turnover Plan:

1.0 INTRODUCTION (cont.)

- Coordination between Design, Construction, Startup, Operations, Quality Assurance, and Maintenance to include CAT and SOT if required.

- Requirements for delivery of vendor drawings and Operations and Maintenance Manuals for "key" vendor supplied equipment.

- Equipment lists to include inputs to CMMS, Preventive Maintenance Scheduling, Spare Parts Listing.

- Standard Operating Procedures (SOP) to include normal operations, emergency shutdown, alarm responses, surveillance, special procedures which includes System Operability Testing (SOT) and other procedures as required have been addressed to functions that will provide these documents.

- Turnover requirements (hardware) and release for operations have been determined.

- The Project Training Matrix is established for training requirements of personnel assigned to the Startup and facility operations.

- All Safety analysis requirements such as an Auditable Safety Assessment (ASA), Safety Analysis Report (SAR), Preliminary Hazards Report (PHR) and Hazards Analysis Determinations (HAD) have been requested, and requirements incorporated into SOT/SOP procedures. This includes issuance of Unreviewed Safety Questions/Determinations (USQ/USQD) and facility Technical Safety Requirements (TSRs).

- Coordination and agreement on the interface between CAT/SOT activities.

- Construction Acceptance Testing (CAT) is performed prior to startup or turnover by a construction subcontractor or FERMCO to ensure that components and items have been furnished, installed and will operate satisfactorily and safely in accordance with parameters established by approved drawings and specifications. Such tests may include, but are not limited to, hydrostatic, pneumatic, flow, electrical, ventilation,meggering, continuity, (balancing), mechanical functioning, pre-operative and startup testing, load, soils, water quality, nondestructive and run in tests.

The types of Operational Readiness Reviews (ORRs) and Readiness Assessments (RAs) for which this manual references after turnover, are defined in RM-0025, FERMCO Operational Readiness Manual, dated May 31, 1995. Other types of classifications (such as Pre-Opt Assessments) will be documented in the Startup/Turnover Plan as defined in Attachment 8.4 of this section. The Pre-Opt Assessment would be conducted by the assigned Project Manager.

2.0 GLOSSARY OF TERMS

ALARA - As Low As Reasonably Achievable

ANSI - American National Standards Institute

ASA - Auditable Safety Analysis

BMP - Best Management Practices

CAR - Corrective Action Report, a controlled document used to record and control the corrective action process, beginning with recognition of a significant condition adverse to quality through the process of correcting the causes and verifying that adequate measures have been taken to prevent recurrence.

Construction Acceptance Testing (CAT) - test performed by a construction subcontractor or FERMCO to ensure that components and items have been furnished, installed and will operate satisfactorily and safely in accordance with parameters established by approved drawings and specifications. Such test may include, but are not limited to, hydrostatic, pneumatic, flow, electrical, ventilation, mechanical functioning, load, soils, water quality, nondestructive and run in tests.

CCB - Configurational Control Board, a board of management and experts knowledgeable of a specific facility. CCB is to review and approve of designs and modifications to systems and processes within the facility.

CDR - Conceptual Design Report

CFR - Code of Federal Regulations

Closure Packages - Quality Assurance closure packages should contain a copy of all documentation which is used to substantiate closure of the acceptable criteria or action item, including DRs, CARs, etc.

CM - Configuration Management, an integrated management process for providing systematic and uniform identification, control, and verification of the functional and physical characteristics of a facility and changes to those characteristics.

CMMS - Computerized Material Management System

Conduct of Operations - See FERMCO's CONOPs Matrices/DOE 5480.19, "Conduct of Operations Requirements for DOE Facilities.

DB - Decision Basis

2.0 GLOSSARY OF TERMS (cont.)

DCN - Design Change Notice

DE - Design Engineering

DEAR - Department of Energy Acquisition Regulations

DNFSB - Defense Nuclear Facilities Safety Board

DOE - U.S. Department of Energy

DOE-ONS - U.S. Department of Energy's Office of Nuclear Safety

DOE ORR - An Operational Readiness Review conducted by the DOE after completion of the FERMCO conducted Operational Readiness Review.

DOE-FN - U.S. Department of Energy - Fernald Office

DOT - U.S. Department of Transportation.

DR - Non-Conformance Report, a report that documents that an item does not meet an acceptance criterion.

EET - Environmental Engineering and Technology

EPA - U.S. Environmental Protection Agency

External Oversight Reviews - Reviews that are performed by organizations outside of FERMCO, such as DOE ORR, DOE-HQ, DNFSB, etc.

Facility - Any equipment, structure, system, process or activity that fulfills a specific nuclear or non-nuclear purpose. Examples include accelerators, storage areas, fusion research devices, nuclear reactors, production or processing plants, coal conversion plants, systems, burial grounds, disposal units, testing laboratories, research laboratories, transportation activities and accommodations for analytical examinations of irradiated and unirradiated components.

FDC - Functional Design Criteria

FEMP - Fernald Environmental Management Project

FERMCO - Fernald Environmental Restoration Management Corporation

FHA - Fire Hazards Analysis

2.0 GLOSSARY OF TERMS (cont.)

FRD - Functional Requirements Documents

FSAR - Final Safety Analysis Report

Graded Approach - a process which applies the amount and stringency of administrative controls, and level of effort, commensurate with the need for the task or activity involved depending upon its importance to safety or other basis.

HAZCAT - Hazard Category

HAD - Hazards Analysis Document

Independent Internal Oversight - Oversight performed by individuals from within FERMCO (normally S&H or P/QA) who are qualified to evaluate the facility systems and/or processes and are independent of the organization being evaluated.

ISRC - Independent Safety Review Committee

Lessons Learned - Lessons from past experience on projects

MORT - Management Oversight and Risk Tree, a methodology which provides guidance for conduct of ORRs.

MT&E - Measuring and Test Equipment

NIST - National Institute of Standards and Technology

NEPA - National Environmental Policy Act

NS - Nuclear Safety

Nuclear Facility - A facility whose operations involve radioactive materials in such form and quantity that a significant nuclear hazard potentially exists to the employees or the general public. Included are facilities that: produce, process, or store radioactive liquid or solid waste, fissionable materials, decontamination, or recovery operations.

OR - Occurrence Reporting, is a notification, reporting, and tracking system for emergencies, unusual occurrences, off-normal occurrences, and non-routine occurrences.

ORR - Operational Readiness Review

2.0 GLOSSARY OF TERMS (cont.)

ORR Plan - A plan that defines a structured method for determining that an activity is ready to operate and/or occupy. It includes, as minimum, review of the readiness of the plant, hardware, personnel, and administrative controls and a determination of compliance with DOE S&H orders.

OSHA - U.S. Occupational Safety and Health Administration

PG - Performance Grading

PHA - Preliminary Hazard Analysis

PM - Preventive Maintenance

P/QA - Performance /Quality Assurance

PSAR - Preliminary Safety Analysis Report

Performance Indicators - A set of measurable achievements and indicators which are tracked and published on a specified frequency for the facility. These indicators are used to measure the performance of the operating facility.

Post-startup Punchlist - A designation for observations and corrective actions that do not require completion before the facility is permitted to startup or turnover.

Prerequisite - Activities or deliverables that are not necessarily directly related to the content of a Functional Area, but which must be completed or available prior to being able to begin or complete a Key Attribute or Requirement within the Functional Area.

Pre-startup Punchlist - A designation for finding and corrective action that require completion before the facility is permitted to startup or turnover.

RWP - Radiation Work Permit

SA - Safety Analysis

S&H - Safety and Health Division

S&S - Safeguards and Security

SAR - Safety Analysis Report, a report that summarizes the hazards associated with the operations of a particular facility and defines the minimum safety requirements for that facility. The SAR is a living document which shall be revised and updated and serves as the basis for Unreviewed Safety Question Determinations (USQD).

2.0 GLOSSARY OF TERMS (cont.)

Shall - Denotes a requirement

SPCC - Spill Prevention Control and Countermeasure

Startup Manager - The Startup Manager will report to the EET Division and is responsible for startup commitments and milestones. The Startup Manager is ultimately responsible for all aspects of the startup and turnover of the facility.

Startup/Turnover Acceptance Criteria - For each requirement within a functional area, a specific and measurable set of characteristics which are used to define an acceptable level of operational readiness necessary to ensure safe operation of the facility. Acceptance criteria are specified such that the applicable requirements are met when the acceptance criteria are satisfied. Inability to implement applicable acceptance criteria requires interim and/or compensatory measures.

Startup/Turnover Functional Area - A broadly stated topical or programmatic subject area, which is necessary to be established and operational prior to startup or turnover of a facility. A functional area is a grouping of similar technical or administrative activities that are distinct and describable and which are specified through requirements. Collectively, these activities are necessary to ensure that the facility is ready to operate safely in accordance with applicable requirements.

Startup/Turnover Key Attributes and Requirements - Within each functional area, major program elements which must be considered, and addressed if appropriate, in order to adequately implement the functional area and meet DOE and FEMP standards. These include items from sources such as codes and standards, DOE Orders and Directives, and FEMP Policies and Practices.

Startup/Turnover Plan (Contractor's) - The Startup Manager prepares and approves, document stating the required activities, milestones, and turnover criteria for a safe startup or turnover of a facility.

TSR - Technical Safety Requirement

USQ - Unreviewed Safety Question

USQD - Unreviewed Safety Question Determination

4.0 RESPONSIBILITIES

4.1 Engineering Startup/Turnover Manager

The assigned Engineering Startup/Turnover Manager is responsible for:

- Appointing a Project Startup/Turnover Manager
- Startup/Turnover Plan in accordance with this manual and submitting the plan for approval.
- Startup/Turnover organization and staffing the operating division organization to meet project and facility requirements.
- Serving as primary interface with DOE-FN and external oversight organizations on matters related to startup/turnover.
- The startup/turnover process, including determination that the startup/turnover type categorization is correct.
- Performing Pre-Operative testing.
- Performing Startup Testing.
- Ensuring that startup or turnover activities are performed in accordance with the Startup/Turnover Plan. This includes:
  - Monitoring critical items and milestone events and providing periodic status reports in accordance with the Startup/Turnover Plan.
  - Ensuring that startup work complies with project requirements, design input from walkdown of procedures by operators, documents and startup administrative and technical documents.
  - Ensuring that sufficient audits, surveillances, etc. have been performed to assure that systems and facilities support Operational Readiness.
  - Ensuring that the facility, or a portion thereof, is operationally ready, prior to requesting conduct of a FEMP ORR/RA.
  - Ensuring that deficiencies identified are properly categorized as pre- or post- start and are tracked and resolved.
  - Plan is approved by VP-EET, and the Project Manager.

4.2 ORR Team Leader

The ORR Team Leader is responsible for:

- Directing and coordinating all Operational Readiness Review and Readiness Assessment activities in accordance with the ORR Plan, and/or RM-0025, FERMCO Operational Readiness Manual.

4.3 Project Manager

The Project Manager is responsible for:

- Managing the Project in accordance with EW-1001, CRU Operating Procedures - Project Management
- Supporting the Startup/Turnover Activities as requested by the Engineering Startup/Turnover Manager.

4.0 RESPONSIBILITIES (cont.)

4.4 Manager of Startup/Turnover, Environmental Engineering and Technology Division

The Manager of Startup/Turnover (EET) is responsible for:

- Approving the Startup/Turnover Plan.
- Ensuring that the requirements of this manual are implemented.
- Establishing and maintaining the guidelines in this manual.
- Appointing the Startup/Turnover Manager responsible for startup/turnover of facilities.
- Providing the necessary resources to support the operating divisions in the implementation of the manual.

4.5 Vice President, Environmental Engineering and Technology Division (VP-EET)

- Ensures Startup and Turnover is performed and supported in accordance with this manual.

4.6 President, FEMP

The President, FEMP is responsible for:

- Approving FEMP facility startup authorization requests per RM-0025.

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5.0 PROCEDURE

5.1 A Startup/Turnover Plan will be prepared and include a summary schedule and a living integrated schedule which identifies major milestones and major supporting plans as defined in Attachment 8.4 of this section of the manual.

5.2 Upon receipt of approval of the Startup/Turnover Plan, the Project Startup/Turnover Manager shall implement the activities defined in the Startup/Turnover Plan. This constitutes the beginning of the Readiness Review phase which could be either an ORR, RA, or Pre-Opt Assessment.

The purpose of the Startup/Turnover activities is to establish that operational facilities and major process meet the following requirements:

5.2.1 Are properly designed

5.2.2 Are constructed as designed

5.2.3 Are tested to verify performance per the design in accordance with testing guidelines contained in this manual and in applicable procedures.

5.2.4 Have been given adequate consideration with respect to all hazards.

5.2.5 Are in compliance with applicable environment, safety, health, related orders, or exemptions or compliance actions have been submitted to DOE-FN per applicable procedures

5.2.6 Are ready for operations in that all applicable functional areas have been determined to be adequate.

NOTE: The Turnover Plan for an existing facility normally need only address the subset of functional areas which were, or may have, changed during the shutdown, or which involved deficiencies resulting in the shutdown.

By implementing the Startup/Turnover Plan Activities, and satisfying the turnover acceptance criteria included in the Startup/Turnover plan, a state of facility Operational Readiness is established. At this point, the facility's structures, services, and hardware are ready for operations; its procedures, administrative controls and safety documentation are deemed adequate and ready for operations; and its personnel are ready for operations.

5.3 A flowchart of the Startup/Turnover Authorization Phase is included as Attachment 8.2 which describes the authorization process as well as the FEMP documents to be prepared.

5.0 **PROCEDURE** (cont.)

5.4 When all activities on the Pre-Startup Punchlist are closed and independently verfied by the FEMP ORR Team for compliance, and the DOE-Fn identified items have been verified closed by DOE-FN, FERMCO shall formally submit a Request for Startup Authorization, according to requirements contained in RM-0025. This request should document, with references, as appropriate, that all prestartup punchlist items, are completed and verified as closed.

5.5 Upon completion of the DOE ORR and receipt of findings (if any), the Project Manager shall develop an action plan and schedule of activities to be performed by FEMP to correct any deficiencies identified in the DOE ORR.

5.6 The Project Manager and Startup Manager shall ensure that the readiness of the facility in all aspects of hardware, personnel, and procedures is maintained from the time of the FEMP ORR assessment of readiness through startup, turnover, and into operations.

5.7 The Startup Manager will initiate startup and turnover of the facility once startup authorization is formally received.

6.0 RECORDS

The following documents, generated through use of this manual, are to be retained as lifetime records:

6.1 The Startup/Turnover Plan and revisions.

6.2 Memoranda documenting startup/turnover categorization for startups/turnovers not requiring a Startup/Turnover Plan.

6.3 Correspondence to DOE-FN responding to and resolving DOE comments on the Startup/Turnover Plan.

6.4 Declaration of Operational Readiness of the facility, or portions thereof, prior to conduct of the FEMP ORR(s).

6.5 Certification of Operational Readiness of the facility following completion of the FEMP ORR.

6.6 Response to DOE-ORR findings regarding readiness to startup/turnover, including action plans for resolution. Other documents, such as notifications of ORRs, startup/turnover authorization requests, and safety documents relating to a facility are generated and retained as required by RM-0025.

7.0 REFERENCES

7.1 RM-0025, FERMCO Operational Readiness Manual

7.2 RM-0016, Management Plan FERMCO Policies and Requirements Manual

7.3 MS-1002, Control of Plans - Internal Requirements Manual

7.4 Volume 1 through 12 of FERMCO Site Procedures (as applicable)

8.0 ATTACHMENTS

8.1 Startup/Turnover Flowchart

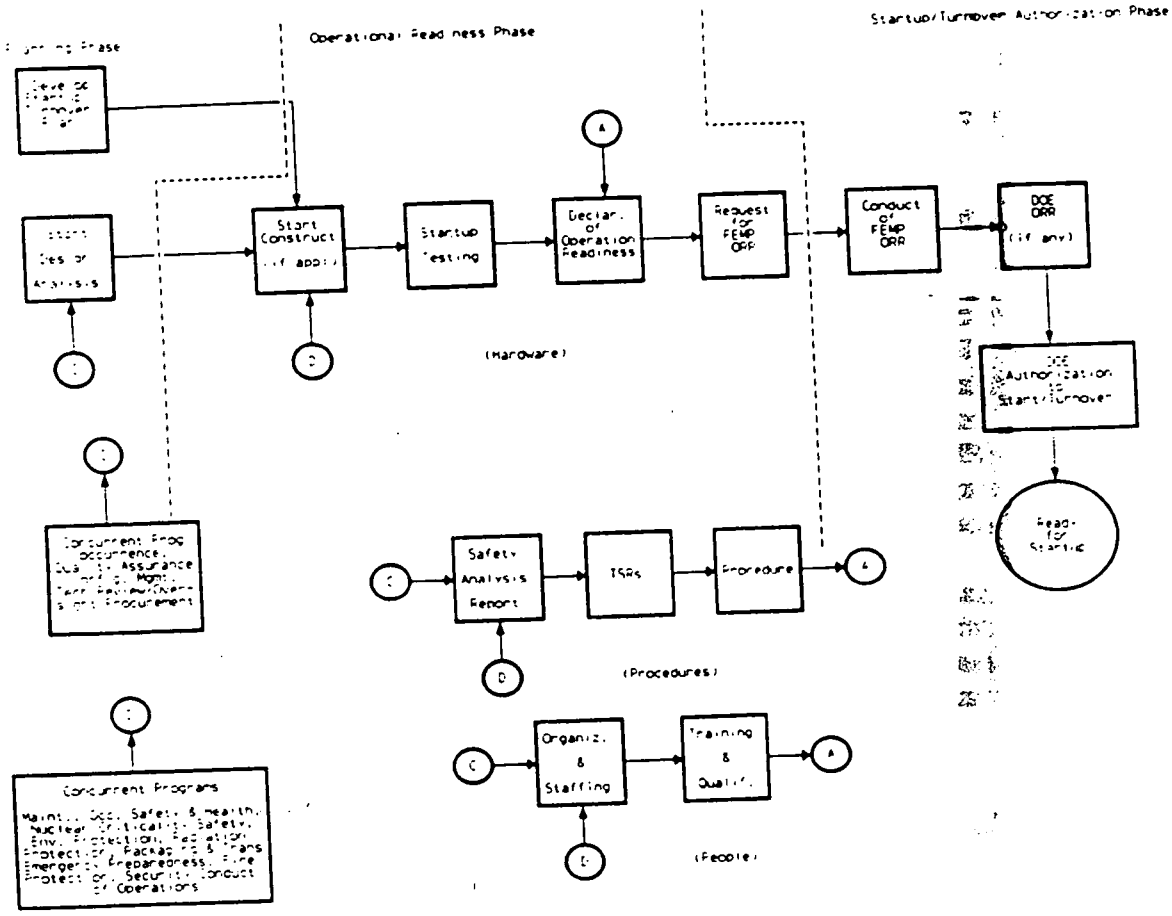
8.2 Facility Startup/Turnover Authorization Phase Flowchart

8.3 Typical Facility Startup Organization Flowchart

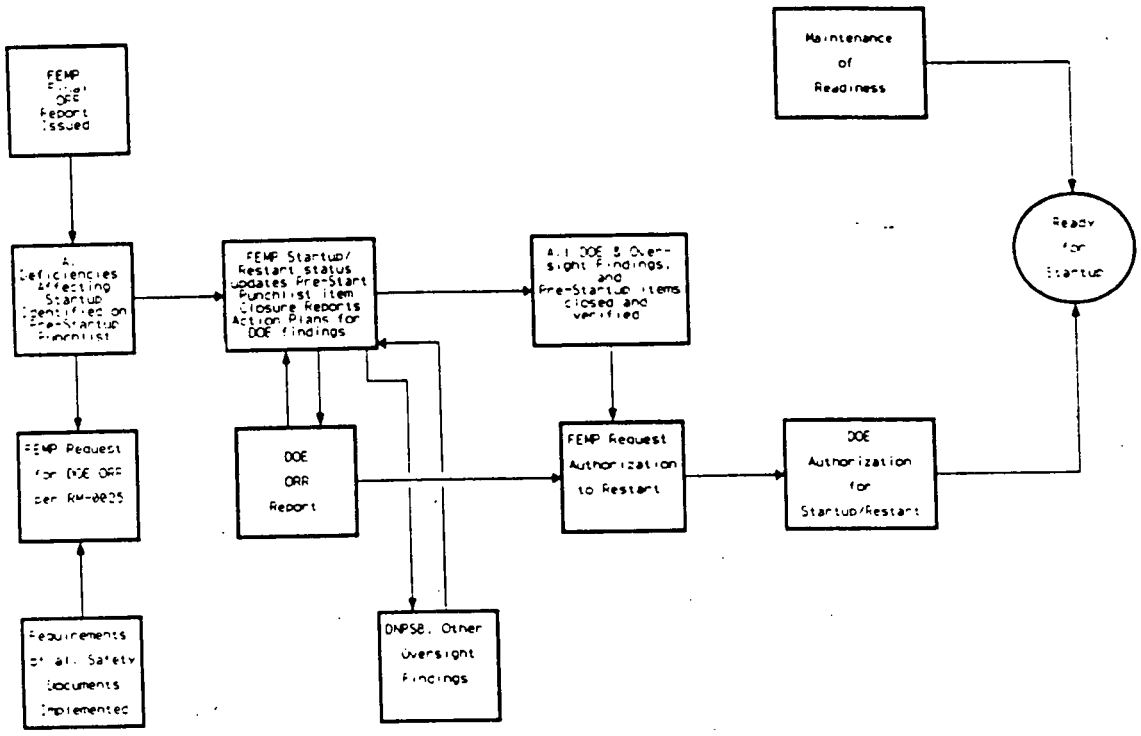
8.4 Typical Facility Startup/Turnover Plan Format and Content Guide.

8.5 Startup and Systems Operability Testing

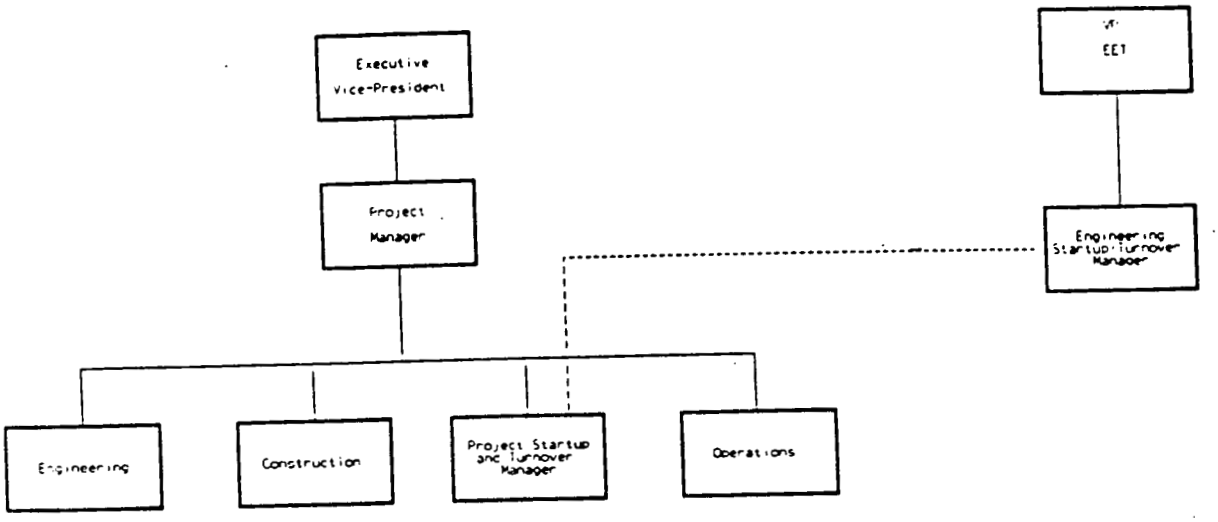
ATTACHMENT 8.1
STARTUP/TURNOVER FLOWCHART



ATTACHMENT 8.2
FACILITY STARTUP/TURNOVER AUTHORIZATION PHASE FLOWCHART



ATTACHMENT 8.3
FACILITY STARTUP
ORGANIZATION FLOWCHART



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ATTACHMENT 8.4
FACILITY STARTUP/TURNOVER PLAN FORMAT AND CONTENT GUIDE (TYPICAL)

Purpose

The purpose of the Startup/Turnover Plan is to define the methodologies, standards, startup/turnover acceptance criteria, and all activities associated with the startup/turnover process for the facility, from design (if applicable) through startup/turnover authorization. The Startup/Turnover Plan shall document the formalized process by which facilities can be started with a high degree of confidence in their safety, operability, and degree of environmental protection. The Startup/Turnover Plan shall define all functional areas, requirements, acceptance criteria, and activities that will be accomplished to establish a state of Operational Readiness of the facility. The plan will address:

- The Test Plan shall ensure components and processes operate per design, as a result of the following:
  - CAT verifies construction per design
  - SOT verifies operations per design
- All of the requirements and justifications necessary for the startup or turnover of the facility have been adequately identified and considered; and
- All activities that must be performed to meet those requirements have been identified and planned.

Startup/Turnover Plan Contents

1.0 Facility and/or Process Description

Briefly describe the major functions and unit operations of the facility and its processes. This description should define the boundaries of the facility addressed by this plan. This section should also include a brief history of the facility, the shutdown (if applicable), and the status of the facility.

2.0 Startup/Turnover Categorization

The startup or turnover of the facility described by the plan shall be categorized. Startup and turnover categories and definitions provided by RM-0025, FERMCO Operational Readiness Manual, shall be utilized.

2.1 If an ORR or an RA is not required, the Project Manager, at the discretion of the Executive Vice President, can perform a Pre-Opt Assessment to determine that the project is ready for operations to commence.

ATTACHMENT 8.4
FACILITY STARTUP/TURNOVER PLAN
FORMAT AND CONTENT GUIDE
(TYPICAL)

3.0 Definition of Startup/Turnover Phases

If facility operations are to be achieved and demonstrated in phases, these phases shall be defined. Definition of the phases should be influenced by the timing of introduction of hazards into the facility, system support requirements, or other logical breakpoints in the startup/turnover process. The plan and interfacing of the FEMP ORR process to the operational phases shall be provided.

3.1 Also determine what areas require system operability testing procedures and designate individuals and/or groups of individuals to write and publish these procedures. Typical Format for these procedures are in Section 6.0, Test Procedure Administration, Paragraph 5.4 of RM-0035, Startup Test Guidance Manual.

4.0 Definition of Major Milestones

Major milestones of the facility startup/turnover shall be defined. They should be supported with an initial program schedule of startup/turnover activities as described below. Milestones should include major program milestones, such as system or project turnovers, completion of startup tests, and completion of the ORR. Startup/turnover phases, if utilized should be represented by major milestones. All programmatic points or documents which could require DOE approval, and points requiring DOE authorization to proceed, should be identified as major milestones.

5.0 Identification of Major Documents or Plans Supporting the Startup/Turnover Plan

Other documents or plans that exist, or will be prepared by FEMP, that support and apply directly to the facility Startup/Turnover Plan, such as Startup Test Plan, an Operational Readiness Review Plan, Input to CMMS/Preventive Maintenance, an upgraded SAR, or Master Equipment List, should be identified and scheduled for issuance, as appropriate.

6.0 FEMP Management and Organization

The management and organization responsible for the startup activities shall be described through organizational charts and supportive narrative information. All activities required to demonstrate Operational Readiness in the management and organization area should be included. Support or oversight from other FEMP Divisions should be specified.

7.0 Startup/Turnover Approval Mechanics

Agreement on the required documents and the level of approval required for startup/turnover or for each phase of startup/turnover shall be established between FEMP and DOE-FN. Doing so allows for implementation of a graded approach to the startup/turnover process. This approach reduces the risk of either a process not meeting DOE expectations or being excessive in light of the type of turnover and/or the hazards involved. Anticipated external oversight (e.g., DOE, DNFSB) reviews should be identified and included in the plan and schedule.

ATTACHMENT 8.4
FACILITY STARTUP/TURNOVER PLAN
FORMAT AND CONTENT GUIDE
(TYPICAL)

8.0 Startup/Turnover Acceptance Criteria Development

This key section of the Startup/Turnover plan describes the development of the Acceptance Criteria which must be met prior to turnover. The Acceptance Criteria are derived from the functional areas and their referenced requirements.

8.1 The Startup/Turnover Plan for the facility should define each criteria that needs to be met prior to completion of Startup and Turnover:

8.1.1 For turnover of existing facilities, normally the only functional areas applicable are those which were changed during the shutdown (hardware or programs), or which involved deficiencies leading to the shutdown. The intent of this process is to eliminate requirements which are not applicable to the facility in question while ensuring that all requirements which are applicable are included.

8.1.2 For applicable key attributes and requirements, expand the requirements as they relate to the facility to be started.

8.2 For each of the applicable requirements in the functional areas:

8.2.1 Define facility-specific acceptance criteria that will measure how FERMCO proposes to demonstrate that the requirements have been met, either through ongoing programs or activities, or new programs or activities to be implemented prior to startup or turnover.

8.2.2 Designate the FERMCO organization responsible for verification that the acceptance criteria have been satisfied.

8.2.3 Include, if possible, in the integrated schedule, the project completion date of the verification.

8.3 For each of the applicable requirements in the functional areas that cannot or will not be met by startup/turnover, provide:

8.3.1 A statement explaining why the requirement will not be met,

8.3.2 A description of proposed compensatory action, if required, or

8.3.3 A schedule for achieving compliance with the requirement.

ATTACHMENT 8.4
STARTUP/TURNOVER PLAN
FORMAT AND CONTENT GUIDE
(TYPICAL)

8.3.4 A surveillance plan to ensure compensatory measures remain in effect until such time as full compliance is achieved.

NOTE: **Any deficiency involving DOE orders, exemptions shall be handled per Site Procedures and DOE-FN Standards**

Once approved by VP or EVP, the Plan represents the framework for conducting the facility startup review and generating the necessary documentation to support the DOE's authorization to startup or turnover. The Startup/Turnover Plan, therefore, represents a comprehensive description of the acceptance criteria and activities which satisfy the acceptance criteria agreed to by DOE as necessary to achieve Operational Readiness and serves to document for FEMP and DOE the scope of work required for startup or turnover. Any additional emerging DOE requirements resulting in new activities would be outside of the agreed-to scope, budget, and schedule.

Since the Startup/Turnover Plan represents the agreed upon scope for facility startup/turnover between FERMCO and the DOE, it is important that implementation details for each of the Startup/Turnover functional areas include where and how the graded approach will be applied based on level of hazard, safety class, category of turnover, or other factors, as well as the justification for the use of the graded approach.

9.0 Startup/Turnover Related Activities
A compilation of all startup/turnover related activities necessary to meet all Startup/Turnover acceptance criteria shall be provided with measurable deliverables.

10.0 Program Schedule
A program schedule shall be included in the Plan that includes, at a minimum, all items discussed in items 4, 5, 6, 7, 8, and 9 above. After DOE approval of the Plan, this program schedule is the basis of the detailed integrated schedule that is prepared for new facilities or facilities that are substantially modified, to plan and schedule all activities related to Operational Readiness and startup/turnover authorization for the facility.

11.0 DOE Order Compliance Status
A status of facility compliance applicable DOE Orders shall be included. The status should reflect compliance with applicable Orders or reference Exemption Requests, per Site Procedure and DOE-FN Standards.

12.0 Startup Plan Checklist
A checklist to determine what requirements are required and also to indicate what is not required.

12.0 Startup Plan Checklist (cont.)

	CHECKLIST ITEM	YES	NO	COMMENT
1.	The systems that are new, modified, or having been shutdown, require verification of operational condition prior to restart, have been identified for testing.			
2.	The requirements for preparation of SOT Specifications and SOT Procedures and performance of an appropriate level of operational readiness evaluation are defined.			
3.	System or equipment installation, condition or performance that requires testing has been identified.			
4.	Responsibilities for all identified tasks have been assigned.			
5.	The Startup Schedule identifies holds points, checks and reviews.			
6.	The Startup Schedule includes the System Scoping, SOT Plan, SOT Specification, SOT Procedure and CG&A Package for each system.			
7.	The Startup Schedule addresses the training of personnel for performance of SOT and Startup			
8.	The Startup Schedule includes the expected approval dates for permits and departmental reviews.			
9.	The Startup Schedule includes the performance of SOT, CG&A and operational readiness evaluation.			
10.	System startup dates are included.			
11.	System startup sequence identified.			
12.	Describe requirements for Emergency Response Plans, Quality Assurance plans, CG&A and operational readiness evaluation.			
13.	Attachments are included with drawings, schematics, data collection forms, checklists etc., as applicable.			

Attachment 8.5

Startup and Systems Operability Testing
Engineering Startup and Turnover Department

1.0 INTRODUCTION

1.0 General

The Startup Guidance Manual used in conjunction with RM-0034, Startup and Turnover Requirements Manual, is intended to provide instructions that ensure uniform and thorough preparation and readiness testing of a new facility or existing facility being restarted from shut down. Each independent system or group of interfacing systems within a defined boundary is to be demonstrated and documented as fully operational, before permitting use of the entire facility.

These Startup activities are performed to verify operational readiness prior to turnover of the facility to the Owner for occupancy and unrestricted operation. Emphasis is placed on verification of the readiness of the systems and equipment to operate safely, within design parameters and without component damage upon initial operation.

Startup activities as described in this manual are to follow this sequence of activities:

- Prepare a startup plan.
- Scope all systems and identify interfaces and boundaries.
- Prepare a plan, specification and procedure for System Operability Testing (SOT) as applicable.
- Determine the level of operational readiness evaluation required and participate in completion of the process.
- Prepare a package for performance of calibration, grooming and alignment activities.
- Execute all startup tests and activities.
- Complete all reports and documentation.

Each activity/project should be evaluated on the basis of its own characteristics (size, complexity, technical risk, hazards etc.) for the need for startup testing, inspection and required documentation. Many activities/projects, such as those for simple structures or piping systems or those without mechanical, electrical or I&C systems, do not typically require application of this startup process.

2.0 Purpose

The Startup Guidance Manual establishes the conditions, responsiblities and requirements to be applied by the Fernald Environmental Restoration Management Corporation (FERMCO) Engineering Division for planning, executing, and documenting startup or restart activities.

The purpose of the manual is to provide guidance for achieving the following:

Establish a uniform approach to startup of facilities or systems.

Establish responsibilities for planning, scheduling, preparing, reviewing, approving, performing and documenting startup activities.

Provide guidance for prepararation of SOT, Calibration, Grooming and Alignment plans, specifications, procedures and packages.

Provide guidance for performance of SOT and verification of proper installation and adjustment of all components. Document findings and resolutions by completing required logs and reports.

Ensure that all equipment to be started following an activity/project has been installed, aligned, serviced and calibrated correctly and is in "ready to operate" condition.

Ensure that each system is operational, meets all specified criteria, safety and surveillance system interlocks are complete and system interfaces function.

Ensure SOT is performed by trained and qualified personnel.

3.0 Scope

The Startup Guidance Manual applies to all facilities, operations or activities at the Fernald Environmental Management Project (FEMP) that require initial startup after shutdown. Exceptions to which the approach outlined in this manual does not apply are determined by the Project Manager, if the startup is relatively simple or routine. The manual describes in detail the methods and criteria to be applied by the Engineering Division to prepare, perform and document all tests and inspections required for startup.

2.0 DEFINITIONS

Activity - A facility, operation, process, system or project.

Approval Authority - The highest level of management signature required to document completion of the requirements of a release point and grant authorization to proceed to the next step of the process.

As-Built Condition - The actual dimensions, location, configuration, specifications or description of a facility, system or piece of equipment after completion of construction, modification or demolition.

Calibration - Calibration is the activitiy that compares actual system/device response to a desired response, based on a selected set of input signals. Data collected from calibration activities may then be used to adjust the system/device to within acceptable tolerances to provide corrections for future use. Calibration is a prerequisite to systems acceptance testing.

CG&A - Calibration, Grooming and Alignment

ES&H - Environmental Safety & Health

FO - Facility Owner

Grooming and Alignment - Grooming and alignment is the inspection, adjustment and verification of initial servicing of equipment. These are activities performed without operation of the equipment and are intended to avoid damage or delay when SOTs are initiated and the equipment is activated. Short term energizing of non-critical motors, fans or pumps may be permitted for verifying the equipment will operate.

I&C - Instrumentation and Controls

Interlocks - Interlocks are defined as devices to prevent one or more parts of a system from being energized or from operating when related system parts have failed or have operated abnormally.

Line-Out - Line-out is a method of highlighting or marking circuits and equipment items on a drawing to indicate that the facility/system so marked is properly installed and correctly performs its intended functions.

Nonconformance - A deviation from the approved design in materials, configuration, workmanship, documentation, equipment installation or performance.

OR&S - Operational Readiness and Startup

ORR - Operational Readiness Review

PCF - Procedure Completion Form, a form intiated upon completion of all sections of a test procedure, or the scheduled portions of a multipart procedure.

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PCN - Procedure Change Notice

PE - Project Engineer - The individual with primary responsibility for a project.

QA - Quality Assurance

RA - Readiness Assessment

Restart - Recommending reactor critical operations and/or program work in nonreactor facilities.

RC - Regulatory Compliance

Scoping - The process of defining startup system boundaries on key project documentations such as Piping and Instrumentation Diagrams (P&ID), single line drawings, and schematics.

Sensitive or Highly Visible Activity - An activity which has the potential for significant onsite personnel contamination, for environmental damage or for an off-site release of radioctivity or contamination, or which is a subject of concern to the public.

SOP - Standard Operating Procedure

SOT - System Operability Testing - A test which is conducted in accordance with an approved procedure to demonstrate and document the conformance of the equipment or system with the specified level of performance, prior to final acceptance and unrestricted operation.

Start (Startup) - Commencing a specific predetermined step that is considered the beginning of an activity or sustained operation of a system or facility.

Startup System - A discrete subgrouping of system components (may be determined through system scoping) which may be constructed, tested, accepted and startup tested as a functional unit.

TC - Test Coordinator

TO - Test Organization

TP - Test Personnel

3.0 RESPONSIBLITIES

Design Agency - Responsible for supplying reproducible copies of all P&IDs, electrical single line diagrams, schematics, system logic drawings, instrumentation software, and instrument loop diagrams for the scoping effort.

Engineering Document Control - Responsible for making and distributing copies of all scoped drawings and maintaining originals on file.

Engineering Manager - Responsible to ensure that the Engineering Division implements an SOT and Startup program in accordance with applicable policies and guidelines.

Facility Owner - Responsible to review and approve the test specifications, packages and procedures with special focus on the operational aspects. Ensures safe operation following construction acceptance. Supplies personnel as requested to support performance of the testing. Has authority to override any decision made during SOT or CG&A by PE, Maintenance, TC, or others to carry out this responsibility.

Responsible for ensuring test schedules and associated system outages are compatible with facility operations, and for isolating the equipment to be tested and setting up initial conditions for testing in accordance with the CG&A package or test procedure.

Maintenance - Responsible for calibrating instruments, installation of temporary test equipment and maintenance of equipment during testing.

OR&S Manager - Responsible for reviewing and approving SOT reports. Performs a final review of all startup documentation, test reports, achievement of activity objectives and as-built condition, organizing and conducting the assessment of the plant or system operational readiness. Assign Startup Corrdinators and Test Coordinators as required.

Project Engineer - Responsible for developing test plans, specifications, procedures and supporting documentation, overseeing testing operations and providing technical consulting during the testing activities.

Project Manager - Responsible to develop startup plans, establish the test organization structure and manage the project/activity testing program. Determines what baseline documents are required for each project. Reviews and approves SOT plans, procedures and specifications.

Project Startup and Turnover Manager - Responsible to the Project Manager for Startup, Testing, and Turnover activities of their respective project.

Quality Assurance - Responsible to review the startup documents for Quality issues and provide surveillance for the test program to ensure compliance with the Test Plan Specifications and procedures. Perform QA verification and certification.

Regulatory Compliance - Responsible to review the environmental compliance aspects of the plans, packages, specifications, and procedures.

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Safety & Health - Responsible to review the health and safety aspects of the plans, packages, specifications and procedures. Provides oversight and signatory approval to performance of testing operations as required.

Startup Coordinator - Responsible for assisting with developing and executing the Startup Plan, managing Startup technical support and scoping drawings to define and document the startup system boundaries and assign the identification numbers on the drawings.

Startup Support Team - Responsible for providing assistance to the Startup coordinator, including system scoping.

Test Coordinator - Responsible for coordinating the review process and obtaining approval of test plans, and procedures. Implements a comprehensive review of the SOT and CG&A packages with Maintenance and the Facility Owner prior to implementation. This review should include a walkthrough which may be held before construction completion.

Responsible for overall test planning and execution including and directing activities, evaluating test results, resolving nonconformances, maintaining the official SOT & CG&A files, processing corrective action as needed, ensuring test equipment calibration is maintained and alerting test team members of any special safety hazards and necessary precautions to be employed during the testing.

Responsible for assembly of the "Record Copy" of the SOT and CG&A packages. It consists of the latest approved revision of the package, augmented by copies of all required data sheets, line-out drawings, PCNs, and Test Exceptions. These items are to be kept together in notebook labeled "Record Copy".

4.0 SYSTEM SCOPING FOR STARTUP

1.0 General

Scoping plays a vital role in the execution of the project. It is used in developing the startup schedules (which in turn affect the construction schedule), developing startup and test plans, planning test activities and for management of plant systems during SOT. Scoping identifies system boundaries which are typically drawn to physical isolation points between systems. Standards for identification of system boundaries is addressed in Section 2.2, Table 2. Startup activities will normally consider the systems and components in three divisions; Electrical (denoting electrical distribution), Mechanical and Instruments & Controls.

2.0 Guidance

2.1 Documentation and Definition of System Boundaries

System boundaries are defined on reproducible copies of "Certified for Construction" drawings. This can be done very efficiently by developing a CADD file of scoping drawings that are automatically updated by revisions to the construction drawings. Boundaries typically occur at open circuit breakers for electrical, at isolation valves for mechanical, and at electrical contacts for I&C components. Refer to Table 1 "Instructions for Marking Scoping Drawings."

TABLE 1: INSTRUCTIONS FOR MARKING SCOPING DRAWINGS

ITEM NO.	INSTRUCTION
1	The points of isolation are always included in the startup system which is either primary, or is placed in service first. Secondary systems include all tie-in's to the primary system that service the secondary system.
2	To identify a system draw a boundary around the components to be included in the system and indicate a system number in the boundary.
3	A legend identifying all system numbers used on the drawing should be providied on all scoping drawings. This legend should also identify the scoping revision number.
4	Designate the system occupying the majority of the drawing space as the major system, and identify it with an asterisk in the legend.
5	Do not include "ghosted" components (those in dashed lines) in the system boundaries. These components appear on other drawings as solid line components and will be scoped on those drawings.
6	Check piping cross references between P&ID's to determine which P&ID will have the system boundary. This should eliminate having piping spools and valves in more than one system.
7	Include "to be determined" components on the main system drawing until a revision with adequate information for scoping is issued.

2.2 Recommendations for Identifying System Boundaries

Detailed recommendations for establishing Electrical, Mechanical, and Instruments & Controls system boundaries are identified in Table 2.

TABLE 2: RECOMMENDATIONS FOR DEFINING SYSTEM BOUNDARIES

COMPONENT TYPE	RECOMMENDATION
Electrical	Electrical distribution systems are generally bounded by the incoming breakers (inclusive), and the outgoing distribution busses (inclusive). All equipment within these boundaries are scoped as a common system. This includes distribution buss ties, and tie breakers. Exception: For auxiliary generating equipment the supply breakers (inclusive) are the downstream boundary (i.e. does not include the distribution busses).
Mechanical	Piping boundaries: The piping in a given mechanical system is generally bounded by the supply isolation valve (exclusive), and distribution isolation valves (inclusive). Exceptions: 1. Where 2 or more isolation valves exist between systems the system providing the service to the other system includes only the first isolation valve. 2. Where no isolation valves exist between systems that interface, the boundary of the system receiving the service includes the piping to a major header of the system that is providing the service. 3. Control or motor-operated valves are always scoped with the system that they serve since they are controlled by the receiving system. Electrical boundaries: The electrical boundary in a given mechanical system is bounded by the supply breakers (inclusive), and the grounding connections (inclusive). I&C boundaries: All instruments connected to the piping, equipment, or support items within a system should be scoped with that system. Mechanical boundaries: 1. Include all equipment within the piping boundaries. 2. Heat exchanger systems are scoped with the system that they serve.

TABLE 2: RECOMMENDATION FOR DEFINING SYSTEM BOUNDARIES (cont.)

COMPONENT TYPE	RECOMMENDATION
I&C	I&C systems are generally bounded by their primary and tertiary systems. The following is a list of applications for this rule: 1. The power supply feed breakers and distribution wires are included with the system they feed. 2. Single-conductor cables: a. Cables that service only one system are scoped with the system that they feed. b. Cables between interconnecting systems are scoped with the secondary system. 3. Multi-conductor cables: a. Cables servicing more than one system are assigned to the system scheduled to be turned over first. b. Cables to a monitor system from a junction box that serves more than one system are scoped with the monitor system.

2.3 Documentation to Support Startup

1. Disrepancies List - Maintain a list of all discrepancies between the drawings, and the equipment list. This list should identify all components that are missing from either the drawings, or the equipment list.

2. Startup System Number List - Develop a record of the Startup system number assigned to each component.

3. Scoped Drawing Index - Establish a drawing index to track the status of scoped drawings to include the following:

   - List all systems identified on each drawing.
   - List drawing revision numbers (both the engineering revision number, and the scoping revision number)
   - Identify drawing and scoping changes for each revision

NOTE: **The scoping drawings and index are maintained by the startup coordinator. These documents are to be included in the project file following project acceptance.**

5.0 SYSTEM OPERABILITY TESTING (SOT) PLAN

1.0 SOT Plan Preparation

The Test Plan is intended to identify the systems and equipment that require SOT and describe the planning, execution and documentation of the tests. It is to include the responsibilities, acceptance criteria and test sequence. A test plan is required if the Project Manager determines that it is warranted based on the project/activity size, complexity, safety and environment issues. This section provides the guidance for the competion of test plans. A plan should address each of the topics below.

1.1 Prerequisites

1. Facility status and condition requirements
2. Interface control requirements

1.2 Test Requirements

1. System Description
2. Performance Criteria
3. Test Description

1.3 Test Personnel Requirements

1. Required manpower
2. Training and qualification requirements for test personnel

1.4 Test Documentation

1. Rationale for methods and extent of SOTs to be performed
2. SOT specifications required for the project
3. SOT procedures required for the project

1.5 Test Sequence and Schedule

1. Test program release points

2. Requirements for managing interfaces of components, subsystems, and systems to be tested.

3. Schedule for completion of specifications, procedures, CG&A packages and execution of SOT activities (this schedule should provide more detail than the startup schedule required in Part 4 of this manual.

1.6 Test Management and Administration

1. Determine approval authority per SM-0005, Section 6 and Appendix A. {This section may be expanded to include impact levels and review requirements}

2. Establish requirements for test equipment, calibration and inspection.

3. Establish requirements for development, review and approval of test documents.

4. Establish requirements for troubleshooting, test suspensions, resolution of nonconformances, test reviews, acceptance criteria and retests.

1.7 SOT Plan Review and Approval

The Test Coordinator and Project Manager determine the list of reviewers for the SOT Plan. The group of individuals identified as reviewers should include personnel with the required expertise to address all aspects of the particular plan. The preparer, prior to release, and the reviewers of the plan should refer to the SOT Plan Checklist to make an evaluation as to its adequacy and completeness.

2.0 Systems Operability Test (SOT) Plan Checklist

	CHECKLIST ITEM	YES	NO	COMMENT
1.	The systems that are new, modified, or having been shutdown, require verification of operational condition prior to restart, have been identified for testing.			
2.	The requirements for preparation of SOT Specifications and SOT Procedures are defined.			
3.	System or equipment installation, condition or performance that requires testing has been identified.			
4.	Methods for testing and criteria for acceptance have been established to the extent possible, and rationale for the selections explained.			
5.	Release points have been identified.			
6.	System interfaces addressed.			
7.	Testing sequences have been addressed.			
8.	Identify where scheduling coordination with the facility operator is necessary.			
9.	Responsibilities for all identified tasks have been assigned.			
10.	Required manpower has been estimated.			
11.	Test personnel training and qualification requirements have been estabilished.			
12.	Input for generating test specifications is complete.			
13.	Criteria for SOT Procedures is included.			
14.	For the SOT Procedure and Specificaiton the requirements for review, approval and revision are included.			
15.	Review and approval requirements are established.			
16.	Addresses requirements for resolution of nonconformance and retest.			

6.0 SYSTEMS OPERABILITY TESTING SPECIFICATION

1.0 System Operability Test Specification Preparation

The SOT Specification is intended to establish in depth the technical requirements, functions and features that are pertinent to the SOTs to be addressed. A test specifications is required if the Project Manager determines that it is warranted based on project/activity size, complexity, safety and environment issues. This section provides the guidance for the completion of the test specifications.

1.1 Specification Title

Self explanatory

1.2 Purpose

The purpose statements should describe:

1. Tests to be performed
2. Systems or components to be tested
3. Justification for performing test
4. Information to be generated by the test

NOTE: This section should be concise and should be summarized, if possible in one or two sentences.

1.3 Test Requirements

This section should identify technical requirements for the test to be performed. The description of the test requirements should include any critical areas that will require special attention or control during the test, and should explain why these areas are important.

1.4 Plant Conditions

This section of the test specification must identify the plant conditions that will be necessary to conduct the required testing (utility services, temperature, humidity, air quality, safety systems, etc.)

1.5 Special Equipment

This section must identify all requirements for special equipment that will be necessary for conducting the test and for recording the resulting data.

1.6 Acceptance Criteria

This section provides all acceptance criteria which will be used to determine if the plant's or system's performance during testing is satisfactory. This section may be presented in tabular format if desired, and combined with the "Data Required" section of 1.7.

1.7 Data Required

This section must identify the minimum data that must be recorded during testing to evaluate whether the plant's or system's performance meets the acceptance criteria listed in section 1.6. This section should also specify the expected range of data results to be obrained from testing.

1.8 Test Predictions

This section may or may not be required, based on the complexity of the preceding test requirements. If required, this section should provide any information that will be useful in preparing test procedures, assisting the FO in preparation for the test, and evaluation of plant or system performance. Also, if an evaluation report documenting the testing is required, it should be identified and stated in this section. If the test requirements are not very complex and do not warrant the preparation of test predictions, this section would state "Not Required."

1.9 Attachments

Any reference material that is considered necessary for the completeness of the test specification should be included as a separate document in the attachments section.

1.10 SOT Specification Review and Approval

The Test Coordinator and Project Manager define the list of reviewers for the test specification, ensuring that reviewers having the required expertise to address each aspect of the testing will be included. The preparer prior to release, and the reviewers should refer to the SOT Specification Checklist in evaluating the adequacy of the test specification.

2.0 SOT Specification Checklist

	CHECKLIST REVIEW ITEMS	BY	YES	NO	COMMENTS
1.	The stated test objectives adequately define the scope of testing and cover all design requirements that require verification by testing	TC, OR&S			
2.	Actions necessary to satisfy test objectives (general test method) appear feasible and are technically adequate for this purpose.	TC, PE OR&S, FO			
3.	The stated precautions and limitations do not restrict the achievement of test requirements and are adequate to assure the safety of personnel and plant equipment.	TC, ES&H OR&S			
4.	The acceptance criterion are measurable and clearly describe satisfactory performance and test completion.	TC, PE, QA OR&S			
5.	The "Data Required" section lists all necessary data that must be recorded as the basis for evaluation of measurements against the acceptance criteria. The required accuracy and expected range of required data are indicated.	TC, PE OR&S, QA			
6.	Test predictions considered vital to test performance or to evaluate the acceptability of the results have been included.	TC, QA, OR&S			
7.	The documents necessary for the review of the test specifications have been included in the references.	TC, PM, OR&S			
8.	Technical specifications defining equipment operating capablilities have been included where appropriate.	TC, PE FO			
9.	The listed test requirements properly relate (preferably one-to-one) with the test objectives and with the acceptance criteria.	TC, QA, OR&S			
10.	The requirements, if any, for tagout of electrical or mechanical equipment have been reviewed and are correct.	TC, PE, FO ES&H			
11.	A valid list of known prerequisite tests have been included if applicable.	OR&S, TC PE, FO			

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2.0 SOT Specification Checklist (cont.)

	CHECKLIST REVIEW ITEMS	BY	YES	NO	COMMENT
12.	Special equipment is justified to conduct the testing and to record the data and is identified in the "Special Equipment" section	TC, PE, FO OR&S			
13.	The test specification provides adequate guidance for test procedure preparation.	OR&S, TC, FO, PM			
14.	The methods prescribed for performing those actions required to accomplish each test objective not overly restrictive.	OR&S, TC, FO			
15.	The establishment of prescribed plant conditions can be accomplished safely within the design and operating limits.	TC, FO, ES&H, OR&S			
16.	Highly sensitive or visible activities have additional managerial or technical oversight and prerequisite concurrence requirements.	TC, PM, FO, OR&S RC, ES&H, QA			
17.	Precautions and limitations are adequately flagged to ensure personnel and plant safety are not jeopardized.	ES&H, TC			
18.	Items, which indicate that special nonroutine radiological controls or personnel dosimetry are required, are pinpointed with explicit instructions noted.	ES&H, TC, PM, FO			
19.	Special personnel qualifications or special training necessary to satisfy sensitive test requirements are properly identified.	ES&H, TC, PM, FO			
20.	Sections specifying the use of protective equipment and devices adequately define the dangers and the precautions to be taken.	ES&H, PE, FO			
21.	All stated limits on plant parameters, as well as set points, are consistent with safety analysis requirements. Deviations are identified as such, with testing provisions for demonstrating nuclear safety or safety defined.	ES&H, PE, FO, TC, OR&S			

7.0 SYSTEM OPERABILITY TESTING PROCEDURE

1.0 System Operability Test Procedure Preparation

This section provides a general guideline to be used in the preparation of test procedures and contains the general format for the procedures. All SOT requires an approved procedure, with the level of complexity dependent on the complexity and quality level of the required testing.

1.1 Procedure Title Page & Table of Contents

1. Title Page - The format for the test procedure title page is provided in MS-1001.

2. Table of Contents - The Table of Contents, identifies the categories of information to be included in the testing procedure.

1.2 Purpose

The purpose statements should be restated here from Part 7, "SOT Specifications," as follows:

1. Tests to be performed

2. Systems or components to be tested

3. Justification for performing test

4. Information to be generated by the test

NOTE: This section should be concise and should be summarized if possible in one or two sentences.

1.3 Test Requirements

This section should provide an overview of testing activities and methodology to satisfy the purpose of the test (see section 1.8 of this procedure for the detailed test procedure activities).

Critical areas that will require special attention or control during the test as identified in Section 8, "SOT Specifications," should be reiterated here.

1.4 References

This section should provide a listing of reference materials such as vendor catalogs, technical manuals etc. that are necessary for operating and assessing equipment performance during the test.

1.5 Prerequisites

This section should list the conditions that must be verified by the TC and the FO/PM prior to testing.

1. The list for TC verification should address the prerequisite requirements for executing the specific test and may include the following:

   - Installation of temporary test equipment
   - Calibration of test instrumentation
   - Completion of identified tests
   - Verification of special protective system settings
   - Performing any required preoperational checks
   - Sign-off requirements by management

   A signature line should be included in this section (or in section 1.8 Detailed Test Procedure) to signify that the TC has verified the prerequisites identified.

2. The list for FO/PM verification should identify the temperatures, mode of control, breaker line-up, valve line-up, safety tagout requirements for equipment, specific tag placements, and any other equipment configurations that are necessary for the test. Plant conditions should be established to allow concurrent testing where possible. Refer to Section 1.8, "Detailed Test Procedures," for documenting verification signatures.

1.6 Test Equipment

This section must provide a detailed listing of all test equipment required to conduct the test and to record the resulting data. Include special test equipment identified in the test specification, with an explanation for any deviations. Also identify sundry items, such as test fittings, instruments, valves, filters, other standard test equipment items and special temporary connections. This list will be used to inventory the equipment prior to scheduling the test to prevent last-minute delays for locating required test equipment.

1.7 Special Precautions

Limiting plant conditions should be established for the test. Tolerances should be defined for each limiting condition to establish appropriate maintenance and operating controls. Critical areas that must be maintained during the test should be identified and accompanied by an explanation of their importance.

1.8 Detailed Test Procedure

The detailed test procedure may include the following:

1. Special Instructions - These instructions address specific issues that are more critical than the step by step instructions for executing the test. These issues may require additional monitoring of plant systems, and verification of plant instrument calibrations. These instructions may also require additional managerial sign-off to proceed with major steps in the procedure.

2. Test Steps - Identify the test steps to follow in chronological sequence and specify any allowable deviations from this sequence.

NOTE: **This section is the official document for conducting the test and, therefore, must be accurate, complete, and well organized. The test steps should be complete and accurate but not too restrictive. The test procedure should be structured with a separate section for each component.**

3. Stopping and Restarting - Provide direction for safely stopping and restarting a test at specific points throughout the procedure. This section should also include requirements for the DANGER tagout of electrical and mechanical equipment.

4. Multiple Components - Components that are similar, such as two pumps, may be addressed by using multiple copies of the same procedure, with only the component designation changed.

5. Symptoms of Trouble - provide a checklist to alert personnel to the symptoms of trouble, and describe the means for assuring that all necessary precautions have been taken prior to initial startup. This checklist should be included or attached just before the test procedure step that authorizes the initial operation of the component.

NOTE: **Risk of damage to a component is greatest at the moment of its initial operation.**

6. Standard Operating Procedures (SOPs) - Test procedures are based on SOPs when available. Operating details need to be addressed here only if they are not covered by SOPs (or if a specific method of operation is desired).

7. Critical Interlocks - Critical interlocks are to be identified and tested in the test procedure. Where practical, they should also be tested during Calibration, Grooming and Alignment (CG&A) to promote early detection of equipment problems. Initial testing of critical interlocks may be deferred to the test procedure if the test is to be closely controlled in accordance with approved procedure.

8. System Restoration - Instructions for restoring the system should be included as the last section to this section. These instructions should provide for the removal of test equipment, temporary connections/equipment and should leave the system in a safe condition ready for operation.

9. Operational Checks - Operational Checks may not require development of a test procedure if the conditions listed in Part 10, Section 2.2 are met.

1.9 Data Required

1. Data Collection - Outline what data is to be collected, reflecting the specific instructions contained in Section 1.8 Predicted test results or acceptance criteria should be included to confirm if the data being recorded is acceptable.

2. Data Sheets - Provide data sheets to record all quantitative data and supporting information noted during the test (listing os the SOPs performed, the location and type of instrumentation used, etc.). Refer to Part 10, Section 2.3 for signature and witnessing requirements for test documentation.

1.10 Attachments

If required, this section should include figures, tables, or drawings which supplement the detailed test procedure. A line schematic or block diagram of the instrumentation setup should be included when appropriate. Figures, tables, and drawings should be labeled and numbered according to the appendix in which they appear.

1.11 SOT Procedure Review and Approval

The Test Coordinator and Project Manager provide a list of reviewers for the test procedure, ensuring that reviewers have the required expertise to address each aspect of the testing. The preparer prior to release, and the reviewers of test procedures should refer to the SOT Procedure Checklist and SOT Specification checklist to make a thorough evaluation of the adequacy of the Test Procedures, applicable signatures will be obtained on the Test Procedure Title Page.

2.0 SOT Test Procedure Checklist

	CHECKLIST REVIEW ITEMS	BY	YES	NO	COMMENT
1.	The acceptance criteria is defined and consistent with information in the test specifications.	TC, QA, OR&S			
2.	The test requirements to be verified in the Test Procedure are consistent with those defined in sections "Purpose" and "Test Requirements" of the approved test specification.	TC, QAA, PM, OR&S			
3.	The CG&A work package or the appropriate sections of the test procedure adequately describe the special equipment, installations, the special plant protection, the calibrations, checkouts, and alignments, etc. requrired prior to test performance.	TC, FO, PM, PE, OR&S			
4.	All documents referenced are current revisions and where required, are approved for the specified application.	TC,PM, FO, OR&S			
5.	The reference material required to conduct the test (operating procedures, drawings, O&M Manuals, technical manual instrcutions for equipment alignment, etc.) is identified.	TC, PM, FO, OR&S			
6.	Testing of all critical interlocks has been included in the test procedure and the specified test methods are adequate.	ES&H, FO, TC, PM OR &S			
7.	Testing and special precautions for critical equipment and systems are specified and the criteria and test methods are adequate.	TC, PE, FO ES&H OR&S			
8.	The Test Procedure requires the proper approvals.	TC, PM, OR&S			
9.	Space has been provided to identify the persons recording the readings.	TC, PM, OR&S			
10.	A list of prerequisites for the initial operation of engineered components has been included and space is provided for appropriate signoffs.	TC, PE, FO, OR&S			

2.0 SOT Procedure Checklist (cont.)

CHECKLIST REVIEW ITEMS	BY	YES	NO	COMMENT
11. The prerequisite, plant conditions, or detailed test procedure sections of the procedure adequately list the special equipment installations, the special plant protection, the calibrations, equipment checkouts and alignments, etc., required prior to test performance.	ES&H, PE, FO, TC, PM, RC, OR&S			
12. The detailed test procedure section describes the test actions in accurate, logical , and chronologically well organized steps. Unnecessary restraints have not been imposed through working or sequence.	PM, FO, TC, OR&S			
13. SOPs, as applicable, should be used in achieving the test requirements. Also, SOPs are used, whenever feasible, with minor specified deviations when practical ot obtain the required test results.	TC, PE, PM, FO OR&S			
14. Special calibration requirements for measuring and testing instruments are specified. Adequate calibration procedures exist. Special labeling of instruments with calibration status is specified where warranted.	TC, PE, FO, OR&S			
15. The figures and tables attached to the detailed test procedure are clear and adequately explained.	TC, OR&S			
16. The data sheets provided for recording the test measurements, are organized for clarity and neatness.	TC, PM, OR&S			
17. The data sheets collectively show that all required data has been included in the readings to be recorded during testing.	TC, PM, OR&S			
18. Space on each data sheet has been provided to identify the person recording each reading.	TC, PM, OR&S			
19. The need for nonroutine QA/QC or special attention as warranted by the nature of the specific test has been evaluated.	TC, FO, PM, PE QA, OR&S			

2.0 SOT Procedure Checklist (cont.)

CHECKLIST REVIEW ITEMS	BY	YES	NO	COMMENT
20. A list has been provided to identify symptoms of trouble that may be observed during testing and require resolution for successful completion of testing.	ES&H, PE, FO, TC, OR&S			
21. Instructions have been included in the procedure for restoring any configurations temporarily altered for testing.	ES&H, PE, FO TC, OR&S			
22. Instructions are provided for stopping and restarting testing should it become necessary during the test.	TC, PE, PM, FO			

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8.0 CALIBRATION, GROOMING AND ALIGNMENT

1.0 General

The purpose of the CG&A package is to provide guidelines for performing and documenting CG&A activities in preparation for SOT. CG&A should accomplish the following:

1.1 Calibrate equipment for initial test conditions.

1.2 Without activation of equipment, verify proper installation, adjustment and prescribed initial servicing. Brief energizing of non-critical motors, fans or pumps may be allowed if necessary to ensure acceptable operation.

1.3 Provide early identification of nonconformances before damage occurs or equipment fails to operate properly, which impacts scheduled SOT or facility use.

2.0 Scheduling CG&A Acitivities

The PE/TC establishes overall CG&A schedules to support SOT. The TC should develop a weekly status schedule for completion of CG&A activities to establish CG&A test priorities, and to coordinate with the SOT schedule.

If possible, the PE/TC should identify the craft support needed for the CG&A activities and include this in the schedule.

It is imperative that the schedule provides for completing the CG&A activities early enough to allow the results to be evaluated prior to initiating SOT (refer to Part 6, Section 1.4, SOT Plan).

3.0 Preparation of the CG&A Package

3.1 Content

The CG&A package identifies the activities, equipment and documentation to be utilized to verify SOT readiness. The CG&A package should address the specific methods for controlling and documenting the CG&A activities and test results. The objective is to prepare the equipment for SOT by detecting and correcting installation errors.

The following is a list of information to be included (as applicable) in the CG&A package:

1. Format

- Table of Contents
- Brief description of purpose and scope

2. Activities

- List required test activities providing a sequence description for activities that must occur in a certain order. This list of activities should identify their respective safety-related requirements.

- Identify electrical and mechanical isolation procedures.

NOTE: **The isolation procedures must include directions for isolating the system as well as for energizing it, and must also specify tagout requirements and placement of necessary DANGER tags.**

3. Documentation

- (Optional) Provide CG&A test boundary drawings, refer to paragraph 3.2.

- (Optional) Provide controlled drawings designated for use as line-out drawings on which to record functional performance of each instrument and its connecting wiring. These drawings are a part of the CG&A package.

- Provide for necessary verification signatures

- Provide a test log to document progress and finding as the test proceeds. Refer to paragraph 5.1

- Determine what reviews and approvals are required for executing the CG&A activities, and establish a means for acquiring them.

- Data sheets, log sheets and a test exception index.

- Jumper and disconnected wire record sheets.

- List of pertinent references.

4. Equipment Lists

- List the equipment to be calibrated and the corresponding calibration procedures. This equipment list should include the I7C devices (including actuators), and the valves (including relief valves). Refer to paragraph 4.1.

- List of valves to be calibrated (including relief valves and their settings) and the associated calibration procedures.

- List of mechanical equipment to be groomed and aligned, refer to paragraphs 4.2 and 4.3.

- List of test equipment needed to perform CG&A activities.

3.2 Defining CG&A Boundaries

The TC defines the boundaries and interfaces of the system covered by the CG&A package on P&ID's and other suitable drawings. These boundaries are to be consistent with their respective SOT boundaries and are documented on the P&ID's and other suitable drawings as are the SOT boundaries. The SOT boundary drawings may be utilized for CG&A documentation of activities. This can be done very efficiently by devloping a CADD file of CG&A drawings (corresponding to the CADD file of SOT drawings) that are automatically updated by revisions to the construction drawings. The division of activities between CG&A and SOT is as follows:

1. Critical prime movers and other intricate mechanisms will not be operated during the CG&A test phase.

2. Non-critical prime movers, other plant equipment, and associated instrumentation, control, and electrical systems may be functionally tested in an energized state during the CG&A test phase. These tests should be limited to verification of correct installation and functional performance.

3. Complete control systems should be tested during the CG&A test phase, consistent with the above constraints whenever possible.

NOTE: **These boundary drawings are aids to the development, review and approval process, but need not be included or updated in the Record Copy of the CG&A package.**

3.3 Equipemnt Calibration Requirements

After defining the CG&A boundaries the TC prepares a tabulation of the Instrument & Control (I&C) devices and valves to be calibrated by the test. From this list the Maintenance personnel will prepare the calibration procedures for installed equipment, and will also calibrate the I&C testing equipment to be used in the test.

3.4 Mechanical Grooming Requirements

Mechanical grooming must be completed prior to operating the equipment. During mechanical grooming the equipment is inspected and adjusted for the following:

1. Verification of adequate equipment cleanliness and lubrication

2. Mechanical valve adjustments or alignments.

3. Verification of correct mechanical installation

4. Verify that operating controls function, and that obvious mechanical problems, such as abnormal vibrations, high motor temperatures, or equipment binding do not exist.

3.5 CG&A Package Review and Approval

The Test Coordinator and Project Manager define the list of reviewers for the CG&A package, ensuring that reviewers having the required expertise to address each aspect of the package will be included. The preparer prior to release, and the reviewers of package should refer to the CG&A Package Checklist to make a thorough evaluation of the adequacy of the package.

4.0 Performance of CG&A Activities

4.1 Calibration

I&C devices are calibrated in accordance with the calibration procedures established by Maintenance personnel. The following guidelines apply to calibration of I&C devices:

1. The number of points at which the calibration is performed is specified in the loop calibration procedures. The calibration number of each calibration instrument must be recorded on the calibration record sheet to ensure traceability.

2. Any necessary adjustments may be made according to the applicable calibration procedure. If, after calibration, inaccuracies still remain which exceed the specified tolerances, a nonconformance exists. Each such nonconformance must be described on a Test Exception Report and processed according to the applicable procedure.

4.2 Grooming

Mechanical grooming is an integral part of the CG&A activity and must be completed prior to operating the equipment. Mechanical grooming includes the following:

1. Verification of adequate equipment cleanliness and lubrication

2. Mechanical valve adjustments

3. Verification of correct mechanical installation

4. Functional checkouts limited to verification of correctly functioning controls and to short-term observations to determine whether any obvious mechanical problems exist (such as abnormal vibrations, high motor temperatures, or equipment binding).

4.3 Alignment

Some alignment testing is performed by construction prior to Construction Acceptance. Where proper testing and documentation of alignment exists the TC may waive retesting the same equipment. The following describes how equipment is tested for alignment:

1. Loop Alignment - Loop alignment is usually performed by construction as part of Construction Acceptance Testing. It is performed by introducing test signals at the input to the initial loop instrument as listed on the loop calibration record sheets. Verification is then made by observing the proper operation of all connected devices (from the measuring element or transmitter to final control element), including checkouts of trips and logic functions.

2. Critical Interlocks - Measuring elements used to actuate critical interlocks must be tested by methods which provide positive assurance that the measured critical condition will actuate the interlock. When this is impractical during CG&A this level of testing may be deferred to the SOT Phase.

3. Functional checks - Functional checks are performed by systematically operating devices (i.e. instrument mechanisms, comparator, relays, control switches, and limit switches) and verifying that contacts, solenoids, indicating lights, etc., perform their intended functions. Operating conditions are simultated by introducing electrical or mechanical signals into the system or by manual operation of relays, control devices, etc., where signal inputs cannot be applied.

4. If jumpers or disconnected wires are required to perform a test, they must be recorded on a Jumper and Disconnected Control Sheet. All jumpers and disconnected wires must be accounted for at the conclusion of the test. Jumpers or disconnected wires remaining at the conclusion of the test must be documented as a Test Exception Report and must reference subsequent affected test procedures.

5. Equipment to be energized for functional testing must be verified for all prerequisistes such as power, cooling, and monitoring services prior to energizing.

4.4 Corrective Action

During CG&A testing, the following corrective actions to plant safety systems may be performed:

1. Changes necessary for equipment to conform to the current approved design.

2. Replacement of identical components and/or materials procured to the design specifications.

NOTE: **Any other type of corrective action to a safety system will require an engineering evaluation (ECP, CCP). A test exception report must be processed to ensure documentation of the action required.**

5.0 CG&A Documentation

5.1 Test Log

The test log is used to document each CG&A activity. The test log is maintained by the TC, and should contain the following information:

1. Listing of all CG&A activities completed during each shift.

*2. Each signifcant nonconformance and its resolution

3. Any instrument adjustments which result in changed calibration, data, such as setpoints, span, range and alarms, as well as any test exception numbers

4. Explanation of any significant delays

5. Descriptions of any unusual events.

*NOTE: **The test log is used to trace nonconformances from their detection to their resolution or transfer to the SOT Procedure.**

5.2 Line-out Drawings

Line-out drawings are used to record satisfactory performance and configuration of tested I&C circuits. Each tested circuit is lined out as it is tested, and the completed line-out drawing is signed and dated by the TC to certify completion.

Lining out equipment indicates that the equipment is in place and functions according to the specifications which govern the use of the equipment. Examples of the application of lining out drawings are as follows:

1. Lining out a conductor indicates that the wire is in place and terminated as drawn.

2. Lining out part or all of an equipment item indicates that the lined-out part operates as shown on the the drawing. For example, the contact actually makes or breaks the circuit and is "normally open" or "normally closed" as shown.

3. A lined out instrument symbol indicates that the interlock functions as shown on the associated logic diagram (if available) and is wired as shown in the appropriate schematic diagram.

5.3 Review and Filinf of CG&A Data

The CG&A documentation is reviewed for completeness prior to initiation of SOT activities. The Electrical and I&C supprt engineers review the loop calibration sheets and report their status to the TC. Calibration data completion dates for all instruments requiring calibration are contained on the loop calibration sheets. The TC reviews the lined-out CG&A drawings, the data, and the Test Exception Reports to determine whether retests are necessary. If retesting is required, the TC arranges a retest schedule.

The final record copy of the CG&A package is maintained in the CRU's project files. Copies of the completed CG&A package scope and test outline are distributed to the OR&S manager, and FO.

6.0 CG&A Checklist

	CHECKLIST REVIEW ITEMS	BY	YES	NO	COMMENT
1.	The purpose and scope of CG&A activities are clearly defined.	TC, PM, OR&S			
2.	The acceptance criteria is defined and consistent with information in the test specifications.	TC, QA, PM, PE OR&S			
3.	The inspections and requirements to be performed and verified in the package are consistent with those defined in sections "Purpose" and "Test Requirements" of the approved test specification.	PM, PE, QA, OR&S, TC			
4.	The CG&A work package adequately describes the special equipment installations, the special plant protection, the calibrations, checkouts, alignments, etc.	TC, PM, FO, PE, ES&H, OR&S			
5.	CG&A test boundary drawings are included illustrating system boundaries and interfaces.	TC, PE, FO, OR&S			
6.	Instructions for completion of Line-out drawings are provided.	TC, PE, FO, OR&S			
7.	If isolation of mechanical or electrical equipment is required, plant procedures are referenced or instructions are provided for isolation, tagout and re-energizing.	TC, PE, PM, FO, ES&H, OR&S			
8.	The reference material required to perform the prescribed activities (operating procedures, drawings, O&M Manuals, technical manual instructions for equipment alignment, etc.) is identified.	TC, PE, FO, ES&H, OR&S			
9.	All documents referenced are current revisions and where required, are approved for the specified application.	TC, ES&H, PM, QA, OR&S			
10.	SOPs, as applicable, should be used in achieving the test requirements. Also, SOPs are used, wherever feasible, with minor specified deviations when practical to obtain the required test results.	TC, PE, FO, PM OR&S			

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6.0 CG&A Checklist (cont.)

CHECKLIST REVIEW ITEMS	BY	YES	NO	COMMENT
11. A list of prerequisites for the initial operation of engineered components has been included and space is provided for appropriate signoffs.	ES&H, PE, FO,TC PM, RC, OR&S			
12. The prerequisite, plant conditions, or detailed test procedure sections of the procedure adequately list the special equipment installations, the special plant protection, the calibrations, equipment checkouts and alignments, etc., required prior to test performance.	PM, FO, TC, PE, OR&S			
13. Equipment energized for functional testing are subject to readiness verification; power, cooling and monitoring prior to energizing.	TC, PE, FO, ES&H, OR&S			
14. The package describes the test actions in accurate, logical, and chronologically well organized steps. Unnecessary restraints have not been imposed through wording or sequence.	TC,PM, PE, FO, OR&S			
15. Methods to provide positive assurance of the performance of critical interlocks that need testing prior to SOT are included in the package.	TC, PE, FO, ES&H, OR&S			
16. Special calibration requirements for measuring and testing instruments are specified. Adequate calibration procedures exist and include number of calibration points. Special labeling of instruments with calibration status is specified where warranted.	TC, PE, FO, OR&S			
17. A list is included comprising the equipment to be calibrated and applicable calibration procedures.	TC, PE, FO, OR&S			
18. A list of mechanical equipment to be groomed and aligned is provided. Activities may include lubrication, cleanliness inspection, valve adjustment, installation inspection, checkout of control function and verification that there does not exist excessive vibration, temperature or binding in movement.	TC, FO, PM, PE, QA, OR&S			

6.0 CG&A Checklist (cont.)

	CHECKLIST REVIEW ITEM	BY	YES	NO	COMMENT
19.	All jumpers and disconnected wires are accounted for at the conclusion of the CG&A activities.	ES&H, PE, FO, TC OR&S			
20.	Required data sheets, log sheets, loop calibration sheets and test exception index are included.	TC, PM, FO OR&S			
21.	The figures and tables attached to augment the detailed package are clear and adequately explained.	PM, FO, TC, OR&S			
22.	Data sheets collectively contribute all required data and documentation, are organized for clarity and neatness and directions for their use are provided.	TC, FO, PM, OR&S			
23.	Space on each data sheet has been provided to identify the person recording each reading, approval and verification signatures.	TC, PM, FO OR&S			
24.	Review and approval requirements are established.	TC, PM, OR&S			
25.	The need for nonroutine QA/QC or special attention as warranted by the nature of the system and activities involved.	TC, PM, QA, FO, OR&S			

9.0 SYSTEMS OPERABILITY TESTING EXECUTION

1.0 Preparation for SOT

The previous sections have described the planning, requirements, development of documents and field adjustments prior to performance of the SOT. This section describes the execution of the approved SOT procedure.

1.1 Review of SOT Documentation

At the completion of Construction Testing and Calibration, Grooming and Alignment the Cognizant TC should review those results and reports to ensure that any problems encountered will not preclude proper test procedure performance. Any nonconformances if unresolved need to be given careful consideration as to potential impact on the SOT. The Cognizant TC incorporates into the SOT procedure any changes deemed necessary as a result of this review via a Procedure Change Notice (PCN) . The final test approval by the Project Manager/OR&S Manager is based upon the results of this documentation review.

1.2 Release for Testing

1. The TC originates a Test Release as required to document approval for performing the SOT. Prerequisite to the Test Release is the Pretest Check Sheet , which is described in section 1.3.2. The FO will sign the Test Release only after the Pretest Check Sheet is complete. The Test Release Form attests that the test preparations are complete, that the noted nonconformances are known and controlled, and that the system is ready for testing. No tests will be started until the Test Release Form has been completed. Subsequent changes to the release copy of the test procedure are made via the PCN. All PCNs are to be entered in the PCN Log , maintained for each activity.

2. When only a portion of the SOT procedure is to be performed (as may be the case with a Conditional Acceptance) and the procedures is structured so that it permits disciplined testing of that portion, the test release will identify the limited scope of the test authorized. When the procedure is not structured to effectively handle a partial performance, a procedure revision or PCN will be prepared that applies only to the portion of the plant being tested at that time.

1.3 Verifying Plant Readiness for Testing

1. Release Points

Specific release points are to be identified by the Approval Authority, which restrict and control critical startup events. This will typically apply to initiation of SOT of a facility or system and subsequent full activation by the Operator. These activities will not be initiated until the prescribed FERMCO/DOE approvals have been obtained. Approval for initiation or continuation of testing is dependent on a positive assessment of the operational readiness to proceed. The process for readiness review may be referenced in SM-00005, the FERMCO Operational Readiness Manual. The intent is to conduct a management review (as required) to ensure that all aspects of the plant, the test program and the supporting services are in place, have been thoroughly reviewed and are certified to be adequate.

Other hold points of lesser consequence contained within the test procedures are established by the Project Engineer, and when appropriate, released by the PE, TC, or FO as required by the procedure.

2. Pretest Checkoff

The TC and FO must complete a Pretest Check Sheet prior to the actual start of SOT. This verifies that all prerequisites have been met. Each requirement on the Pretest Check Sheet must be signed and dated by the person performing the check.

An additional form is required for each specific release. The signed Pretest Check Sheet must be attached to the Record Copy of the test procedure, with the Test Release Form. Boundaries between systems or facilities subject to testing and external systems will be clearly delineated during the pretest activities. These boundaries will be maintained during the testing activity by tagging and/or the tag and lock procedure. Isolation which provides control interfaces between hazardous, inactive or radioactive systems should be controlled with tag and lock requirements.

The FO must also ensure on a continuing basis that every test to be conducted has been reviewed to acheive the following:

- Identify TP and data-taking personnel requirements and responsibilities.

- Ensure that adequate staff can be scheduled to meet the testing requirements needs.

- Determine that QA has been notified of the expected testing start date and time so that they may check or witness specific points in the testing.

- Determine that all drawings to be used during startup testing reflect the latest revisions.

- Ensure understanding of the pretest documentation and material requirements prior to testing

- Ensure lead time to prepare for special equipment, instrumentation, and other materials needed and the development of applicable documents.

- Ensure that tests in progress are following established test procedures.

- Ensure that sufficient data has been obtained to proceed with the next phase of the project, program, department or division activities.

3. Handling of Test Exceptions

Nonconformances which may affect or restrict performance of a test procedure are designated as Test Exceptions and documented on a Test Exception Report Form when detected. Test Exception Reports will be entered into the Test Exception Log maintained for each test activity. This situation often occurs before release of the affeted test procedure for testing. The open items should be included on a list so that they may be tracked until they are resolved. Nonconformances which must be resolved before initiation of a specific test procedure step are identified in the margin of the Record Copy of the test procedure next to the specific step involved.

The TC will assign a completion date to each listed test exception. Dates will be assigned based on priority and the startup schedule. If changes must be made to the test completion schedule, the changes will be reviewed by the TC, PE, and Project Controls for an impact on the overall schedule.

1.4 Briefings

1. Briefings By The Test Coordinator

Pre-test briefings are the option of the TC unless required due to the existence of certain conditions. Briefings are required if the test presents unusual safety hazards, has the potential for producing abnormal plant conditions, requires non-routine data taking for highly visible or sensitive activities, or if so ordered by Management. The TC documents the briefings in the test log per section 2.0

Prior to the beginning of a test, the TC briefs the FO, Maintenance and TP concerning important aspects of the test. This briefing should cover the purpose of the test, specific test objectives, all potential hazards, special precautions, plant conditions and details of the test procedure. Each participant should understand the overall test plan and his/her individual responsibilities for performing the test safely and obtaining the required data. Briefings may be repeated as becomes necessary.

2. Dry Runs

Dry runs for SOT are the option of the TC. Dry runs will normally be conducted for tests which have been designated highly visible or sensitive. The purpose of this runis to provide hands on familiarization with the system configuration and test equipment, to enhance the likelihood of a successful SOT. Dry run performance should utilize assigned personnel in assigned positions. Precautions must be taken to ensure that the systems, equipment and calibrations are not inadvertently altered or damaged by inexperienced operators during dry run activities.

1.5 Test Equipment

1. The TC arranges for basic test equipment to support SOT. In accordance with the assigned responsiblity of preparing for testing, the TC assesses test equipment needs and:

   - Determines its availability
   - Ensures its physical transfer to a FERMCO storage area to guarantee ready access.
   - Verifies its calibration status.
   - Coordinates its installation and in-place standardization just prior to usage.

2. Maintenance personnel are responsible for maintaining and controlling the equipment storage area, performing the calibrations, assembling the equipment where needed, and installing the equipment when requested. In storing and controlling this equipment, provision must be made for segregating the precision test equipment from the maintenance equipment employed in everyday use.

3. Special Test Equipment

Special test equipment may be identified for a specific SOT, initially in the test specification and subsequently in the test procedure.

Special test equipment will most likely fall into one of the following categories:

- Test equipment for which the design or procurement requires lead time in excess of three months.
- Test equipment which impacts the design of plant equipment with special mounting requirements or requiring a special plant configuration.
- Test equipment which must be installed early in plant construction because of installation limitations.

Operation of this special equipment during testing may require special familiarization. The procedures required by these operations are referenced by, or attached to, the test procedure. Procedures should be followed strictly to avoid equipment damage, which could result in delays to the test program.

Maintenance personnel may become involved in the installation for special test equipment and in verification of proper installation and calibration, in support of SOT.

4. Test Instrument Package (TIP)

Test Instrument Packages consist of written and graphic instructions to Maintenance personnel which outline special instrumentation items needed to support CG&A activities or to perform a test procedure. The TC determines if a TIP is required based on the complexity of the work. Normally the TIP provides information such as installation details for test jumpers, hoses and special test fixtures. The TC is responsible to generate the TIP if required.

2.0 Conduct of Testing

2.1 Execution

The FO is responsible for the proper and safe execution of all CG&A and SOT procedures and for coordination of all maintenance activities in direct support of testing. The TC provides technical direction, test assitance, and test evaluation during the tests.

Testing will be conducted on a multiple-shift basis when required. Conduct of testing is coordinated by the assigned FO who designates personnel for each shift. The technical direction of a given test activity remains the responsiblity of the TC. The TC must provide the FO with a prepared Test Release Form at least one hour prior to the shift when a given test activity will be performed.

The following guidelines apply to execution of SOT:

- Approved SOT procedures must be followed as written. Any deviations must follow the proper procedures.

- The TC will interpret test procedure working which require personal judgement during a test situation.

- In the event the test procedure cannot be followed explicitly or test conditions arise which are unexplained or unsatisfactory, the TC or TP should interrupt the test and proceed in accordance with Section 2.4.

2.2 Operational Checks

An operational check of equipment or systems does not require a test procedure if all of the following conditions are met:

- The check is simple and can be performed verbatim directly from the applicable component technical manual without changes or additional operating instructions.

- The check does not require *operation* of the equipment outside of normal operating limits.

- The check does not involve any deviations from specification requirements.

Operational checks should be identified in the startup plan, test plan, and test event schedules.

2.3 Documentation

1. Test Logs

The official record of the conduct of testing and operation under the direction of a TC is the test log. All information pertinent to test activities, not recorded in the procedure or data sheets should be enterd in the test log. Copies of the test log are distributed daily to the project team members who need to be apprised of daily status. The TC is responsible for log entries and signs at the end of each shift. The log should note dates and times, identify testing initiated and/or completed, progress, delays encountered and vital information pertaining to testing and performance.

The PE/TC is responsible for preparing, maintaining and distributing test logs. QA personnel may also sign and date entries to indicate their witnessing or audit of any test or portion thereof.

The log copies are distributed daily with the original retained as the Record Copy for the Test Log, the yellow copy to the OR&S and the required copy to the FO.

2. Surveillance and Data Collection

Personnel having familiarity with the operation of the system and the purpose and procedure for testing will be scheduled to assist with surveillance and data collection. Instrumentation and equipment for data collection must be installed, calibrated and tested. Recording charts or personnel must be positioned to read and record the required data as each testing activity is conducted.

When operating equipment for startup tests, the minimum amount of operational surveillance and data collection will be as prescribed for normal operation. The TC will determine if an additional number of personnel are required to meet the needs of the test activity. Personnel should posses the appropriate data sheets for recording the required data and initialing data entries.

3. Data Handling

To the maximum extent possible, the required data for a test is to be recorded directly into the Record Copy of the test procedure. All completed data sheets ill be collected and placed into the Record Copy of the test procedure by the TC at least once each shift. If multiple copies of the same sheet are used for recording data, these data sheets are to be collected by the TC for review and storage. The TC is to ensure that all required data is included on the sheets received.

Prior to proceeding with the next step of a test or to another test in a mandatory test sequence, the TC reviews the data collected during the testing for acceptablity. If inconclusive, additional data may be taken. If the testing results are still in doubt, the OR&S Manager will assist with a resolution.

4. Witnessing

Test procedures may require that specific test steps or events be witnessed by other than the normally assigned TC's, test personnel, or maintenance personnel. Special witnessing is identified in the SOT procedure, and it is the responsiblity of the TC to provide advance notice to the witnesses regarding the testing schedule. Upon completion of testing, applicable signatures of individuals who have witnessed and signed any part of the test procedure will be obtained on the Test Procedure Signature Page.

Mandatory QA hold points imply a mandatory requirement for a verification

signature prior to continuing to the next step. Optional QA witness points are not cause for test interruption, but may be verified by signature if included in the procedure. QA may sign and date any steps of the test procedure that they audit or review. This will be by full signature or stamp in the right margin at the point the witness took place. A bracket may be used to indicate what portion of the procedure was witnessed.

2.4 Nonconformances

During CG&A and SOT, nonconformances may be identified by anyone involved in the testing activity. The TC must be advised of the nonconformance and will pursue a timely resolution to minimize schedule impact.

1. Suspension of Testing

The TC or FO have the authority to interrupt a test whenever any of the following nonconformances arise:

- The plant (system) fails to operate as predicted or proceeds toward an unsafe condition.
- Test results are contrary to those predicted or to prescribed safety limits.
- A component or system discrepancy is identified.
- A procedure error is found.

When a test hold is implemented, the FO determines if the systems affected should be left in test conditions or placed in an alternate standby condition. Hold actions are documented in the test log and signed by the TC and FO. Testing may not be resumed until the test hold is removed.

During a hold situation the following activities may be performed:

- Preliminary investigations.
- Correction of insignifcant nonconformances.
- Performance of troubleshooting procedures contained in approved PCN's developed to resolve significant nonconformances.

2. Insignifcant Nonconformances

Insignificant nonconformances are relatively minor and meet all of the following conditions:

- Does not affect the safey, performance, interchnageability, interface, installation, maintainability or behavior of the system.
- Does not modify, breach or open any system that is in its final configuration that requires quality control inspection and sign-off to reseal or close.
- The resolution will not impact compliance with the system design requirements.
- No design change or drawing modifcation is required.
- Can be corrected with readily available resources such that a delay of no more than 8 hours will occur in the performance of the test procedure.
- Does not involve a plant safety system, fire protection system or an ASME Code pressure boundary.
- Does not require preparation of a Test Exception Report Form.

The following are examples of conditions that may be considered to be insignificant nonconformances:

- Editorial corrections such as typographical, grammatical or editorial errors which do not affect the technical content of the test procedure; changes to valve lineups which do not change valve positions or delete valves from the lineup.
- A changed revision number of a referenced document.
- Faulty circuitry in need of minor adjustment
- Meter wiring reversed.
- Instrument out of calibration which can be corrected by routine maintenance procedures or replacement with identical equipment that is in calibration.

3. Significant Nonconformances

Significant nonconformances are those having characteristics which exceed any of those listed in section 2.4.2

4. Resolution of Nonconformances

Insignificant nonconformances may be resolved without a Test Exception Report Form being required. The insignificant nonconformance, by definition, can be resolved with readily available resources with no more than an 8 hour delay.

All significant nonconformances require initiation of a Test Exception Report Form. To complete the report it may be necessary to determine:

- If the test must wait until the nonconformance is resolved before it is resumed.
- If the nonconformance is acceptable.
- If a design change is required.
- If subsequent steps of the test procedure are affected.

5. Troubleshooting

If a nonconformance issue arises that requires significant evaluation and troubleshooting to develop a solution, a plan must be developed to amend the procedure via the PCN. The troubleshooting plan should describe:

- The methods to be used to identify the problem.
- Plant preparations and control guidelines for the work, including identification and control of interlocks and power sources.
- The in-plant work proposed for problem resolution.
- The return to desired test conditions.

6. Corrective Maintenance

Work by Maintenance personnel to correct nonconforming conditions will normally come under the direction of the Project Engineer. The FO will determine the extent of his/her involvement necessary based on the scope and details of the task.

7. Documenting Nonconformances

Insignificant Nonconformances and their resolution will be documented through routing entries in the test log.

Significant Nonconformances must be entered on the Test Exception Report Form and are to be collected daily and entered into the open Items list. The responsibility for resolving test exceptions resides with the PE/TC. The FO reviews the open items list at the time subsequent tests are released to ensure that outstanding items will not impact additional testing.

8. Restart of Testing

Approval to resume testing following the release of a test hold must be granted jointly by the TC and the FO by signing a release in the test log.

If in the judgement of the TC or FO the plant test conditions cannot be reestablished under the existing test procedure, the TC will initiate a PCN to provide instructions. The PCN must identify the point in the test sequence where testing will restart, the necessary steps to achieve the conditions required, and any testing which must be repeated to verify the effectiveness of the remedial action.

9. Testing Continuity

If testing is to be performed in a discontinuous manner, the TC and FO should make a determination if a PCN will be necessary for return to plant operating conditions before resumption of testing. If possible, when this situation is anticipated, the PCN should be prepared and approved prior to initiation of the test phase. If testing is not continous, but is concluded within a single shift, it is not considered to be interrupted. The requirements for test restart consist of a verification of the previous conditions by the TC and a notation that the check was performed in the test log.

2.5 Procedure Change Control

The need to make changes to SOT procedures may arise at any time between initial approval and test completion. Changes may involve either technical or administrative content. The change should be submitted and reviewed if it will make a needed correction in regard to safety, function or performance of plant equipment or collection of test data. Any procedure change should be evaluated with regard to its effect on schedule, special equipment needs, altering acceptance criteria or data sheets, or modification to required plant conditions before it is proposed.

The TC and the FO must approve all procedure changes. Other approvals are also required which are determined based on the impact of the change. The impact

levels are described on the PCN form along with the approval requirements of each. The TC completes the PCN, akes the determination of the applicable impact level and obtains the required approvals. The TC may then distribute copies of the procedure with the changes indicated to those on initial distribution of the SOT procedure.

2.6 Retesting

As the SOT is conducted, the TC evaluates the effects of all nonconformance resolution actions and determines if retest or recalibration is required. If the results of any test produce unsatisfactory data, which is considered to be a significant nonconformance, the TC completes the Test Exception Report Form. In the report it should be indicated if a retest is required, if recalibration or equipment maintenance is required or if a procedure change is needed.

The TC will ensure that the necessary followup actions are taken to resolve each condition identified. If retest procedure requirements are not explicitly covered in the SOT procedure, a PCN must be written detailing the retest procedure prior to any retest.

The Test Exception Report or the PCN must specify the necessary test procedure steps to be performed during retest. The TC must ensure that the test data obtained during retest is traceable to the test procedure requirement. All retest data is stapled to the Test Exception Report or PCN for filing with the official test data package.

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10.0 SOT REPORTS

1.0 Types of Reports

1.1 Final Test Report - The Final Test Report is issued when all sections of the test procedure and identified retests are complete.

1.2 Partial Test Report - A Partial Test Report is issued when the report covers less than the entire test or when additional testing is identified before the Final Test Report is issued.

1.3 Procedure Completion Form (PCF) - The PCF precedes initiation of the Test Report, records interim acceptablility of the tested system or equipment and serves notice that the FO is now responsible for maintenance of the system configuration.

1.4 Supplemental Test Report - A Test Report issued when additional testing is identified subsequent to issuing the Final Test Report.

2.0 Content of Reports

2.1 Procedure Completion Form

The content of the PCF is defined by the information requested on the form. The completed PCF will ensure that the following occurs:

1. Jumpers are removed; components disconnected for testing purposes are reconnected.

2. The FO is advised on any unresolved Plant Work Requests that may affect system maintenance or operation.

3. The FO is advised of any changes to the drawings that were used during CG&A and the test procedure performance.

4. Advance information is available immediately upon completion of the test procedure, prior to issuing the Test Report, documenting completion of the tests.

5. Directions are provided regarding the disposition of test equipement.

6. Documentation is provided of the preliminary Test Engineering review for the test sections completed.

2.2 Test Reports

The Test Reports makes a comparison of the test results to the performance criteria specified in the test procedure. The performance of the systems and equipment

tested is described quantitatively by appropriate data reduction (e.g. charts, graphs, tables), where possible. If there are significant discrepancies the report will describe them and the actions taken to resolve them, then provide recommendations for further actions as may be necessary. Test reports may be categorized as Final, Partial, or Supplemental.

The report will document technical changes made to the test procedure during its execution. It will list resolved test exceptions and their significance, including recommended actions, timing and interface considerations. Also listed will be recommended changes to the operating procedures, drawings or manuals which evolve as a result of test performance or data review.

Unresolved test exceptions will be listed and their significance discussed. Discussion is to include recommended actions, timing and interface considerations. Plant Work Requests, resolutions requiring extensive retests subsequent to issuing the final report, generating additional test data is to be reported in a Supplemental Test Report.

3.0 Processing of Reports

3.1 Procedure Completion Form

The PCF is initiated by the TC. All test exceptions must be closed out and the TC must verify all initial blocks on the procedure Record Copy have been completed prior to its issue. The TC must obtain the approval signature of the FO then make distribution which will include the PE, the Cognizant TC and SE, the organizations identified to have action items and as appropriate other original approvers.

3.2 Test Reports

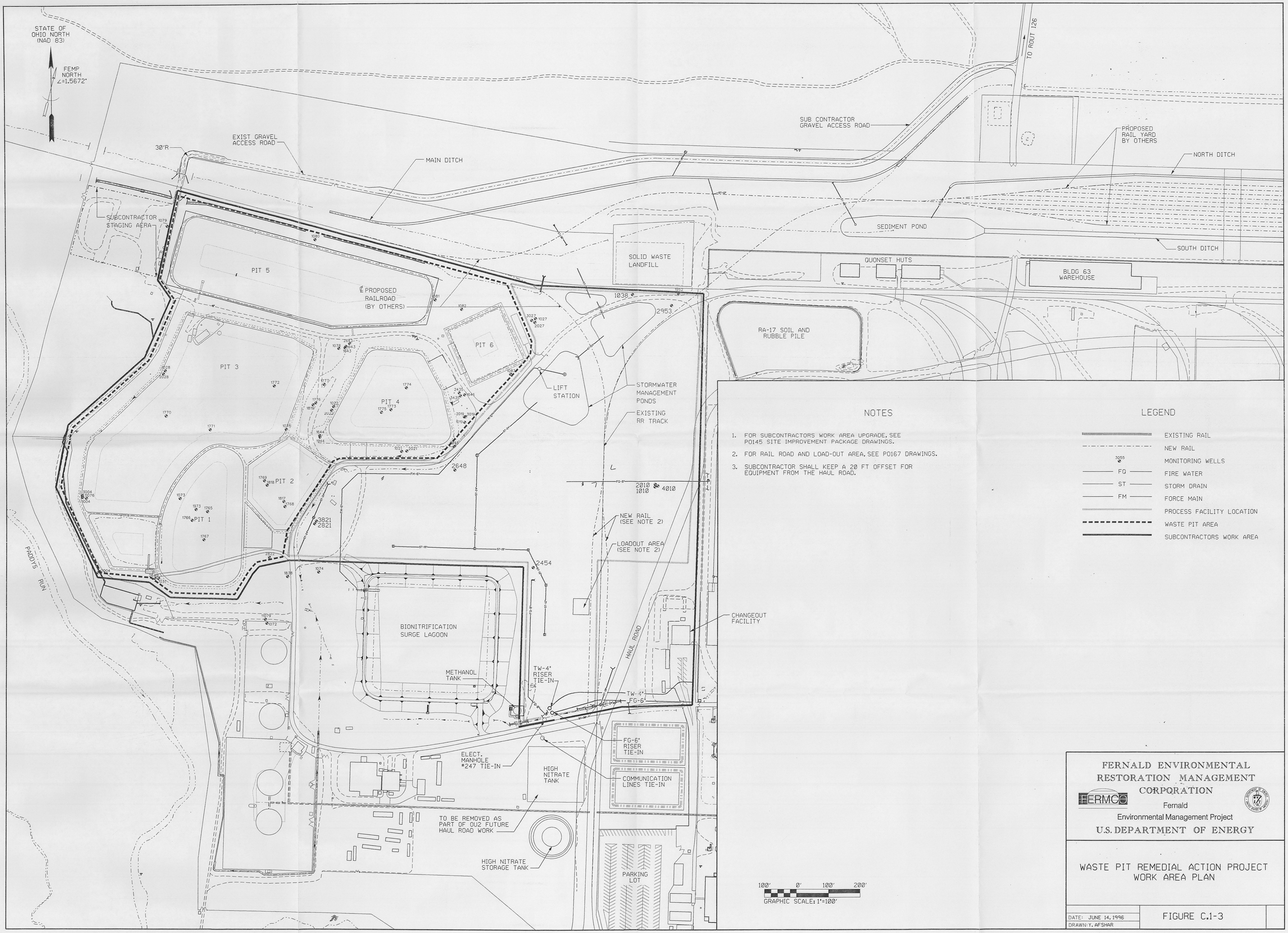
All Test Reports are prepared and assembled as directed by the PE/OR&S Manager. Qualified technical specialists may be involved if necessary to review the test results prior to issue and to confirm any recommendations for additional testing, procedure changes, or other remedial action needed. Each Test Report is approved by the PM/OR&S Manager.

After a test activity is completed, the PM/OR&S Manager issues the Partial or Final Test Report, for review. The distribution will include the PE, the cognizant TC and SE, the organizations identified to have action items and as appropriate other original approvers. The PE/OR&S Manager will review the report and its characterization of the testing it addresses. Any comments will be submitted to the TC for resolution. If a Supplemental Test Report is generated in response to the review comments, it must also be processed for approval.

Partial Test Reports are sequentially numbered for unique identification and the numbering is also independent of partial test numbering. The Final Test Report does not include data and test results previously reported in a "Partial", but does

coordinate previous reports such that it is clear to reviewers that all testing required has been completed.

The TC shall maintain the original file of all issued Test Reports until the entire package is complete and forwarded to the PM for permanent storage in the project files.



NOTES

1. FOR SUBCONTRACTORS WORK AREA UPGRADE, SEE P0145 SITE IMPROVEMENT PACKAGE DRAWINGS.
2. FOR RAIL ROAD AND LOAD-OUT AREA, SEE P0167 DRAWINGS.
3. SUBCONTRACTOR SHALL KEEP A 20 FT OFFSET FOR EQUIPMENT FROM THE HAUL ROAD.

LEGEND

- EXISTING RAIL
- NEW RAIL
- 3055 MONITORING WELLS
- FQ FIRE WATER
- ST STORM DRAIN
- FM FORCE MAIN
- PROCESS FACILITY LOCATION
- WASTE PIT AREA
- SUBCONTRACTORS WORK AREA

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

FERMCO

Fernald Environmental Management Project

U.S. DEPARTMENT OF ENERGY

WASTE PIT REMEDIAL ACTION PROJECT
WORK AREA PLAN

DATE: JUNE 14, 1996
DRAWN: Y. AFSHAR

FIGURE C.1-3

FILE NAME: /USR/RFILES/OU1/P0167/SKG04370.DGN