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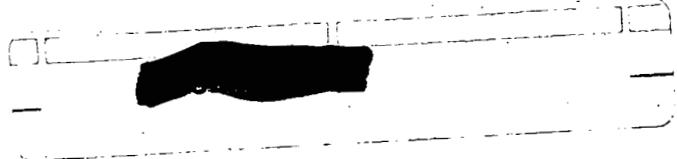
**ADDENDUM TO THE REMOVAL ACTION
NUMBER 9 LOW LEVEL RADIOACTIVE WASTE
THORIUM MANAGEMENT PROGRAM AUGUST
1992**

08-01-92

DOE/EPA

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ADDENDUM



ADDENDUM

TO THE

3672

REMOVAL ACTION NUMBER 9

LOW LEVEL RADIOACTIVE WASTE

AND

THORIUM MANAGEMENT PROGRAM

**Fernald Environmental Management Project
Fernald, Ohio**

**U. S. Department of Energy
Fernald Office**

August 1992

U. S. Department of Energy
Fernald Office

August 1992

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Introduction

This document is prepared as a addendum to the FEMP Removal Action Number 9, Removal of Waste Inventories Low Level Radioactive and Thorium Management Procedures.

This removal action is being conducted pursuant to the laws, regulations and agreements listed below, and will comply with the provisions of each:

- The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, also known as Superfund, which provides for the investigation and cleanup of uncontrolled hazardous waste sites
- The Superfund Amendments and Reauthorization Act (SARA) of 1986, which renewed and updated CERCLA
- The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) of 1990 (40CFR300.415[m]), which spells out how CERCLA and SARA will be implemented
- The Federal Facility Compliance Agreement (FFCA) of 1986 between the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (U.S. EPA) that provides for the investigation and cleanup of environmental impacts from past and present activities at the FEMP
- The FFCA was amended in 1990 by a Consent Agreement that imposed consistency among the operable unit concept and the current commitments of the RI/FS program without modifying the underlying objectives
- The Consent Agreement was itself amended the next year to establish definitions and schedules for completion of RI/FS documents for the five operable units and to identify additional specific removal actions at the FEMP

Objective

The specific objective of Removal Action No. 9, is to prepare all low level radioactive waste (LLRW) and thorium inventories currently at the FEMP for shipment to the Nevada Test Site (NTS) for disposal. This will be accomplished through the characterization, identification, packaging and storage of all subject materials.

Background

The FEMP LLRW Management program has been operational since the initiation of activities in the early 1950s. The FEMP also served as the DOE repository for thorium material. As a consequence of production operations, considerable quantities of radioactive LLRW and thorium have been generated. Until 1985, these wastes were placed in a series of waste pits and silos located on the western portion of the FEMP. Beginning in 1984, much of the newly generated waste was placed in containers as the pits neared capacity. In 1986, placement of all LLRW materials into pits was terminated. Since that time, all LLRW material have been containerized and stored for future disposition. Since the cessation of production activities in July 1989, waste materials generated at the FEMP are limited to those which result from environmental restoration activities.

In August 1985, the FEMP initiated a large-scale, off-site program involving the transfer of LLRW inventories to the NTS. This program involves the characterization, treatment, packaging, and transport of waste in full compliance with DOE Orders, Department of Transportation shipping requirements, and NTS waste-acceptance criteria.

In May 1991, the USEPA, and DOE entered into negotiations concerning a possible modification to the 1990 Consent Agreement pertaining to the Fernald Environmental Management Project (FEMP). Consistent with these negotiations, DOE agreed to reconfigure the existing Low Level Radioactive Waste (LLRW) and Thorium Management Program into a removal action consistent with Section IX of the Consent Agreement and the provisions of the National Oil and Hazardous Substance Pollution Contingency Plan.

During the negotiation process, a consensus position was reached between the agencies and the DOE establishing that, in lieu of a removal action work Plan, the DOE would submit a compendium of existing procedures and documentation for the Low Level Radioactive Waste and Thorium Management Program. LLRW and Thorium Management procedures have therefore been consolidated into one deliverable due to the similarity in operations and the reliance on overlapping policies and procedures. In addition to the initial submittal, an annual update will be issued on June 30th of each year.

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OVERVIEW OF LOW LEVEL RADIOACTIVE AND THORIUM MANAGEMENT PROGRAM

Supporting Documentation

The FEMP LLRW and Thorium Management Program represents a cohesive management approach enveloping the characterization, packaging, storage transport, and disposal of inventoried LLRW and thorium materials. Work elements are conducted and controlled through a hierarchy of documentation supporting site operations (See Figure 1). As identified in Figure 1, program documentation is prepared to fulfill the driving statutory, DOE, and corporate requirements. These drivers result in a series of FEMP site and individual supporting departmental policies and procedures controlling the conduct of every aspect of program operations. The primary driving requirement of the FEMP LLRW and Thorium Management Program is DOE Order 5820.2A, entitled Radioactive Waste Management, which defines the policies and minimum requirements for the management of radioactive wastes at DOE Facilities. All operations performed by contractors or subcontractors at DOE Facilities are required to be conducted in accordance with the provisions of this order.

The hierarchy of documentation supports every aspect of operation at the FEMP including, but not limited to, health and safety, training, quality control and quality assurance, laboratory services and waste management operations. Since the focus of Removal Action Number 9 is on the existing documentation supporting ongoing LLRW and thorium management operations, other supporting documentation such as quality assurance, health and safety and laboratory services plans and procedures were not included. A Site Document index is provided in the Removal Action documentation, providing a listing of these available site documents. Other supporting documents not specifically provided in the submittal are available upon request.

Figure 2 provides a simplified logic diagram defining the interrelationship between the major components of the Waste Management Program. Table 1 highlights the key site documentation and implementing procedures supporting each of these major program components.

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Supporting Documentation (continued)

Figure 3 provides a summarization of the procedures that have been written or revised with each of the submittals to the U. S. EPA since the initiation of Removal Action Number 9.

It should be recognized that revisions to existing policies and procedures result from evolving program needs or unique site conditions and are an integral part of a successful program. The documentation provided in Removal Action No. 9 is intended to be a living baseline, meeting current site needs, while retaining the flexibility to respond to changes in an efficient manner. Revisions or updates will be provided to USEPA on an annual basis (June) for Removal Action Number 9.

Waste Inventory

To date, approximately 340,00 drum equivalents (DEs) of LLRW have been transferred to NTS for disposal from the FEMP. In June 1992, authorization was granted to ship Thorium to NTS, approximately 38 drums were shipped in June. Remaining at the FEMP are approximately 158,000 DEs of LLRW including 55,000 DEs of drummed production residues, 10,000 DEs of Scrap Metal, 12,000 DEs of scrap wood pallets, 25,000 DEs of recoverable metals, 11,000 DEs of copper scrap, 34,000 DEs of construction rubble and approximately 10,562 DEs of thorium materials. Figure 4 represents a status update on the LLRW and thorium drum equivalents that have been transferred to NTS for disposal for fiscal year 1992. Tables 1 & 2 illustrates future projections on Waste shipments to NTS.

These remaining waste inventories are stored within the former Production Area of the FEMP, which is maintained as a radiologically controlled area requiring strict access and worker health and safety controls. These waste inventories are considered a component of the Operable Unit 3 Remedial Investigation/Feasibility Study (RI/FS) being conducted pursuant to the Amended Consent Agreement.

Integration with Operable Unit 3 RI/FS

The LLRW and Thorium Management Program actions are consistent with final remedial actions based on the fact that mitigation of personnel/environmental risk and safe, permanent disposition of FEMP wastes/materials are ultimate goals. Establishment of safe storage configuration and/or off-site disposition of LLRW and thorium materials currently in inventory at the FEMP will allow for the development of permanent disposition for the

Integration with Operable Unit 3 RI/FS (continued)

large quantities of remedial wastes. In addition, characterization of these materials will only be required as part of the Operable Unit 3 Field Program for Residues which have not been disposed under this removal action.

Close coordination will be maintained with the ongoing RI/FS for Operable Unit 3 to ensure that planned LLRW and Thorium Management Program Removal Action activities appropriately support RI/FS field investigations and alternative evaluations by incorporating interim clean-up of source term into baseline risk determination and Operable Unit 3 site characterizations.

WEMCO DOCUMENT HIERARCHY

- DRIVERS**
- . DOE ORDERS
 - . STATE & FEDERAL LAWS
 - . Y CORPORATE DIRECTIVES
 - . CONTRACTUAL AGREEMENTS

- POLICY & MANAGEMENT DIRECTIVES**
- . DEPARTMENT & COMMITTEE CHARTERS
 - . POLICY & PROCEDURES

- SITE OPERATING & INTERFACING DOCUMENTS**
- . PLANS
 - . INFORMATION DOCUMENTS
 - . REQUIREMENTS DOCUMENTS
 - . SITE OPERATING DOCUMENTS

- DEPARTMENT DOCUMENTS**
- . DEPARTMENT PROCEDURES
 - . PLANS
 - . MANUALS

CHARTER - A DOCUMENT DEFINING THE WORK SCOPE & RESPONSIBILITIES OF A DEPARTMENT, COMMITTEE, COUNCIL, BOARD OR FUNCTION.

POLICY & PROCEDURE - A STATEMENT OF MANAGEMENT POLICY FOLLOWED BY A SERIES OF ADMINISTRATIVE INSTRUCTIONS, INCLUDING RESPONSIBILITIES & PRINCIPAL ACTIONS AFFECTING TWO OR MORE DEPARTMENTS.

PLAN - A DOCUMENT IDENTIFIED AS REQUIRED BY A DRIVER OR INFORMATION DEFINING ACTIONS TO BE TAKEN TO MEET A REQUIREMENT.

INFORMATION DOCUMENT - INFORMATION COMPILED ON A SUBJECT AND PRESENTED TO BE INFORMATIVE FOR PERSONNEL OF THE FEMP OR AS REQUIRED BY EXTERNAL ORGANIZATIONS.

REQUIREMENTS DOCUMENT - A DOCUMENT DEFINING REQUIREMENTS FOR AN ACTIVITY AFFECTING TWO OR MORE WEMCO ORGANIZATIONS.

SITE STANDARD OPERATING DOCUMENT - A PROCEDURE THAT PROVIDES DETAILED OPERATING INSTRUCTIONS FOR AN ACTIVITY TO TWO OR MORE WEMCO ORGANIZATIONS.

DEPARTMENT PROCEDURE - A PROCEDURE THAT PROVIDES INSTRUCTIONS TO ONLY ONE WEMCO ORGANIZATION.

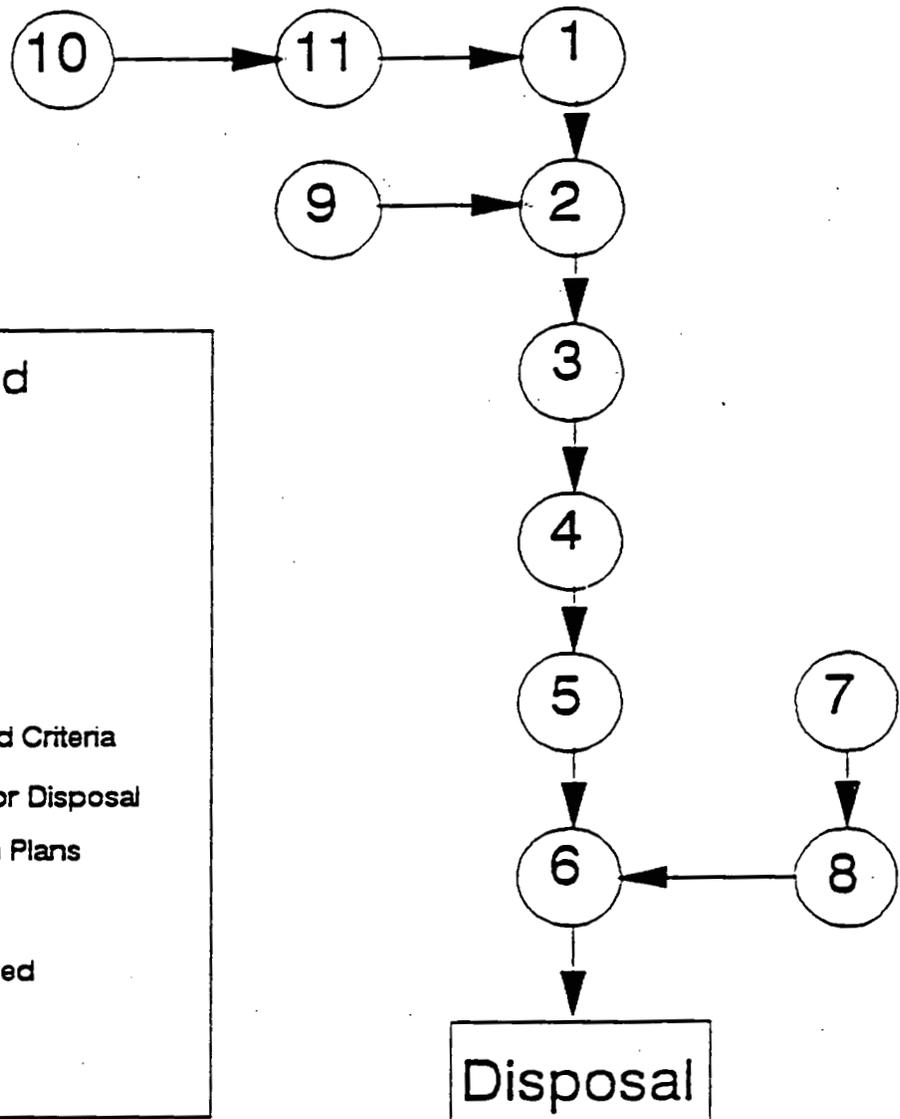
PLAN - A DOCUMENT IDENTIFIED AS REQUIRED BY A DRIVER FOR ONLY ONE WEMCO ORGANIZATION IN ORDER TO MEET A REQUIREMENT.

MANUAL - A DOCUMENT THAT PROVIDES DETAILED REQUIREMENTS/INSTRUCTIONS AFFECTING ONLY ONE WEMCO ORGANIZATION.

FIGURE 1

LOGIC DIAGRAM: WASTE MANAGEMENT

FEMP



Legend

- 1. General Waste
- 2. Sample & Characterize
- 3. Package for Storage
- 4. Storage
- 5. Package for Disposal
- 6. Load & Transport Waste
- 7. Disposal Facility Requirements and Criteria
- 8. FEMP Obtains Approval to Ship for Disposal
- 9. Waste Analysis & Characterization Plans Developed & Implemented
- 10. Waste Minimization Plans Developed
- 11. Waste Minimization Activities Fully Implemented

FIGURE 2

REMOVAL ACTION NO. 9 DOCUMENTATION FLOWCHART

- Procedure additions
- Procedure revisions
- Procedure change

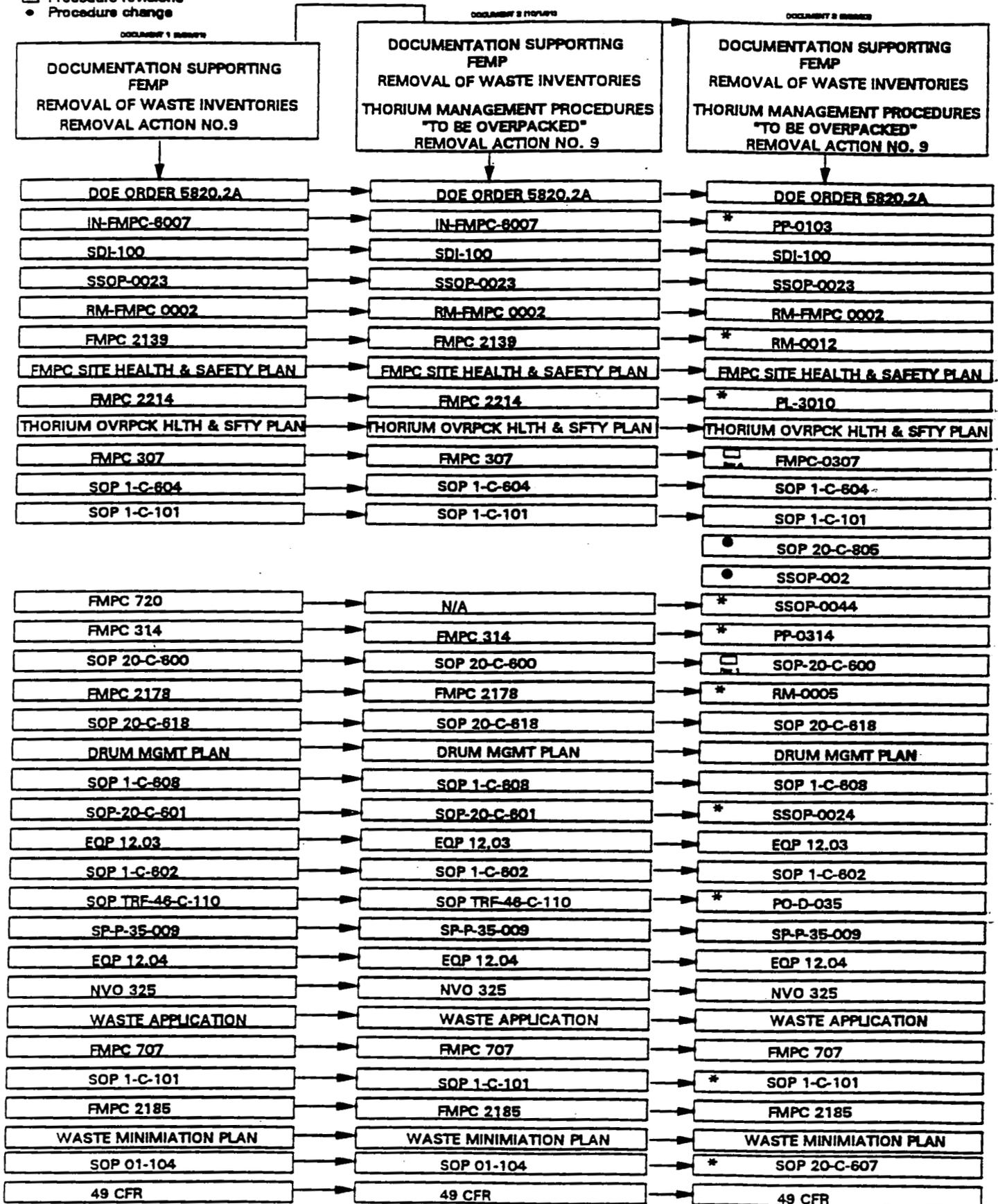


FIGURE 3

TABLE I
GENERAL SUPPORTING DOCUMENTATION

DOCUMENTATION	PURPOSE
U.S. Department of Energy Order 5820.2A	To establish policies, guidelines, and minimum requirements by which the Department of Energy (DOE) manages its radioactive and mixed waste and contaminated facilities.
PP-0103, Site Document System	This site procedures defines the system of documents by which the FEMP is managed and details the requirements for development, preparation and control of these documents.
SDI-100, Site Document System Index	This document includes a listing of current site documents and department documents.
SSOP-0023, Deviation and Corrective Action Reporting	This procedures identifies the assigned responsibilities and required actions for identifying, documenting, evaluating and providing dispositions and correction action plans for deviations and correction actions observed during audits, reviews, surveillances, inspections or tests performed at the Site by both internal and external organizations, as well as the evaluation of supplier-proposed dispositions and corrective actions plans.
RM-FMPC-0002, Centralized Training Program Manual	This site manual establishes the requirements for all personnel involved in the development and delivery of training. The manual is prepared in accordance with DOE Order 5480.18. The manual also references the U DOE Training Accreditation Program (TAP) Manuals. Copies of this document will be made available upon request.
RM-0012, WEMCO Quality Assurance Program Plan	This manual incorporates the policies for achieving or exceeding the required quality levels in the operation of the Site. The program is based on the criteria specified in ANSI/ASME NQA-1. Oak Ridge or 5700.6 and DOE Order 5700.6B specify NQA-1 as the preferred standard for Quality Assurance. Copies of this document will be made available upon request.
FMPC Site Health and Safety Plan	This site plan provides the overall means for planning and implementing the job site characterization, health, and safety training and job orientation for personnel. Copies of this document will be made available upon request.
PL-3010, FY-1992 Environmental Restoration and Waste Management Site Specific Plan	This document provides the public and other outside organizations, such as EPA, with a summary-level look at the site environmental management and waste management activities. Copies of this document will be made available upon request.
Thorium Overpacking Project Specific Health and Safety Plan for Buildings 67, 68, and the Middle Bay of 64.	The purpose of this plan is to describe the specific health and safety concerns and the controls used to reduce employee exposures while overpacking the containers of thorium in Buildings 64, 67, and 68.

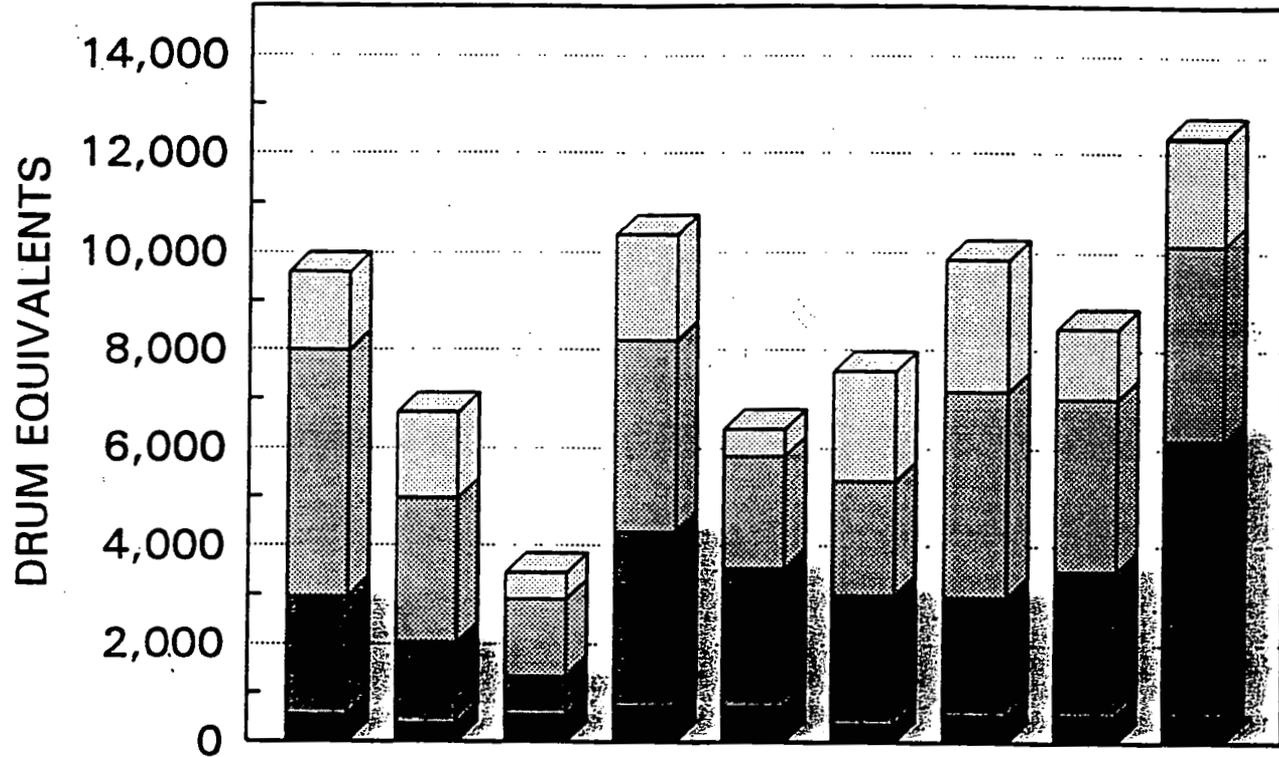
IMPLEMENTING PROCEDURES

PROCEDURES	PURPOSE
FMPC-0307, Control and Accountability of Nuclear Materials	This site policy implements the responsibilities regarding Nuclear Materials and requirements for nuclear materials control and accountability program planning and management as contained in Materials Control and Accountability (MC&A) Manuals, FMPC-2083 and PL-FMPC-3006.
SOP 1-C-604, Inspection and Evaluation of Containerized Low Level Radioactive Waste (LLRW)	The purpose of this department operating procedure is to provide the steps for the inspection of containerized waste residues and refuse material.
SOP 1-C-101, Sampling Residue and Waste Materials	The purpose of this department operating procedure document is to establish the procedure for taking representative samples of residues and waste at Plant 1 and Resource and Conservation and Recovery Act (RCRA) storage facilities.
SOP 20-C-805, Sampling Drummed Waste for Hazardous Identification	The purpose of this department operating procedure document is to establish the procedure for sampling drummed waste.
SSOP-0002, Completing the Material Evaluation Form	The purpose of this document is to provide the procedure for complying the Material Evaluation Form to classify materials as RCRA or NON-RCRA.
SSOP-0044, Controlling the Generation of Construction/Maintenance Waste	This site procedure describes the requirements and responsibilities for minimizing the construction waste generated at this site, for separating and segregating these waste materials, for determining the contamination present, for proper handling and packaging, and for determining disposition.
PP-0314, Packaging, On-Site Movement and Off-Site Shipment of Material	This site procedure delineates the requirements and assigns the responsibilities for ensuring that materials, including uranium products, waste and nonhazardous miscellaneous items, are properly packaged, marked, labeled, loaded, and secured for transportation both on-site and off-site.
SOP 20-C-600, Overpacking defective Containers	The purpose of this department procedure is to establish the procedure for overpacking defective containers.

PROCEDURES	PURPOSE
RM-0005, FEMP Lot Marking and Color Coding System	The keystone of effective nuclear materials control is accurate and complete identification and segregation of each distinct material so that an appropriate uranium or thorium content and isotopic level may be determined and applied toward the construction of material balances. This site level booklet has been prepared to describe and illustrate the use of the lot marking and color coding system employed at the FEMP.
SOP 20-C-618, Completing the Low Level Radioactive Waste (LLRW) Container Data Sheet	The purpose of this department procedure is to provide the procedure for completing the LLRW data sheet needed to certify packaged waste for disposal.
Drum Management Plan	The purpose of the Fernald Environmental Management Project (FEMP) is to set forth the program that is in place to minimize environmental impact of stored, drummed materials at the FEMP. The sections contained in this plan outline the aggressive operational actions and administrative controls which have been implemented to enhance FEMP drum storage.
SOP 1-C-608, Storage of Radioactive Material	The purpose of this departmental procedure is to provide the requirements for storing radioactive material.
SSOP-0024, Packaging Low Level Radioactive Waste (LLRW) for Off-Site Disposal	This departmental procedure provides for the packaging of contaminated waste for off-site disposal.
EQP 12.03, Certification of Waste package Examination and Sealing for Off-Site Shipment	This quality departmental procedure outlines the method for the certification of waste materials at the FEMP prior to off-site shipment, and is applicable to low level radioactive waste only.
SOP 1-C-602, Low Level Radioactive Waste (LLRW) Shipment Preparation	This departmental procedure provides the procedure for preparing low level radioactive waste for shipment off site.
PO-D-035, Shipment of Low Level Radioactive Waste Requirements	This procedure shall apply to WEMCO's Traffic and Transportation Departments in ensuring that low level radioactive wastes (radioactive materials) are properly packaged, marked, labeled, loaded, and secured, and proper shipping documents are in full compliance with WEMCO, DOT/DOE and NTS regulations and directives.
SP-P-35-009, Radioactive Material Shipping and Receiving	This departmental procedure sets administrative guidelines for the shipping and receiving of Radioactive Material at the FEMP.
EQP-12.04, Certification of Loading and Shipment of Low Level Radioactive Waste	This procedure establishes a detailed method for the certification of low level radioactive waste packages, the loading of low level radioactive waste materials and the examination of highway transport vehicles for exclusive use shipments only at the FEMP to ensure compliance with applicable federal regulations.
NVO-325, Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements	This document establishes U.S. Department of Energy Nevada Operations Office (DOE/NV) defense radioactive waste acceptance criteria and requirements for waste certification and transfer. These criteria and requirements apply to all waste received at the NTS Area 3 and Area 5 Radioactive Waste Management Sites (RWMS) for storage or disposal. The generator approval process also is outlined. The requirements in this document apply to both on-site and off-site waste generators and replace the requirements of NVO-185, Rev. Operational Radioactive Defense Waste Management Plan for the Nevada Test Site dated January 1985. (NVO-185 will continue to exist as a DOE/NV defense low level waste management program planning document.)
Waste Application	The purpose of the waste application is to formalize and request approval for the methods employed by the FEMP to ship waste to the disposal facility.
FMPC 707, Audit Program	This procedure describes the responsibilities and requirements for planning, performing, and documenting formal audits of WEMCO activities and of WEMCO's suppliers of equipment and services. Included are the audits and appraisals required by DOE Orders and directives.
SOP 1-C-101, Sampling Residue and Waste Materials	The purpose of this document is to establish the procedure for taking representative samples of residues and waste at Plant 1 and Resource Conservation and Recovery Act (RCRA) storage facilities.
FMPC 2185, Sampling Plan for Drummed Waste at the FEMP	This plan summarizes the steps required to determine sampling methods, sample analysis, statistical evaluation of data, and analytical quality assurance for waste determination. Copies of this document will be provided upon request.
Waste Minimization Plan	The purpose of this plan is to establish the FEMP Waste Minimization and Pollution Prevention Awareness Program. The plan specifies those activities and methods that will be employed to reduce the quantity and toxicity of wastes generated at the FEMP. In addition to establishing the FEMP Waste Minimization and Pollution Prevention Awareness Program, this plan also meets legal requirements, educates FEMP personnel, sets goals, and plans actions regarding waste minimization and pollution prevention.
SOP 20-C-607, Segregation of Wooden Pallets	The purpose of this departmental procedure is to provide criteria to segregate wooden pallets into four categories: 1. repairable, 2. reusable, 3. nonrepairable, and 4. out-of-specification.

June 30, 1992

LOW LEVEL SHIPMENT STATUS TO NTS



	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
TRASH	546	365	547	729	729	364	546	547	546
WOOD	2,411	1,654	784	3,556	2,808	2,829	2,412	2,982	5,830
METAL	5,036	2,946	1,585	3,916	2,296	2,305	4,196	3,501	3,958
CONST	1,598	1,754	537	2,151	554	2,247	2,685	1,440	2,168
THORIUM	0	0	0	0	0	0	0	0	38
Total	9,591	6,719	3,453	10,352	6,387	7,545	9,839	8,450	12,340

FIGURE 4

THREE-YEAR WASTE SHIPMENT FORECAST

GENERATOR: Fernald Environmental Management Project PREPARED BY: S. W. Heisler, Jr. DATE: 01/31/92

FORECAST PERIOD	WASTE STREAM NUMBER	WASTE TYPE	CONTAINER			NUMBER OF SHIPMENTS	TOTAL VOLUME CUBIC FEET
			TYPE	SIZE	NUMBER		
FY-1992 07/01-09/30	001	Process	Sea/Land	8'x8'x20'	75	60	101,175
	002	Construction	Sea/Land	8'x8'x20'	32	24	43,168
	002	Construction	Metal Box	4'x4'x7'	575	64	58,650
	005	Thorium	Drums	55-gal.	1,560	26	11,544
	006	Residues	Metal Box	4'x4'x7'	50	6	5,100
	007	Contaminated Trash	Sea/Land	8'x8'x20'	10	5	13,490
	TOTALS					185	233,127
			FY-1992	GRAND	TOTAL		766,105

TABLE 2

THREE-YEAR WASTE SHIPMENT FORECAST

GENERATOR: Fernald Environmental Management Project PREPARED BY: S. W. Heisler, Jr. DATE: 01/31/92

FORECAST PERIOD	WASTE STREAM NUMBER	WASTE TYPE	CONTAINER			NUMBER OF SHIPMENTS	TOTAL VOLUME CUBIC FEET
			TYPE	SIZE	NUMBER		
FY-1993	001	Process	Sea/Land	8'x8'x20'	31	23	40,470
	002	Construction	Sea/Land	8'x8'x20'	93	70	125,457
	002	Construction	Metal Box	4'x4'x7'	1,500	166	153,000
	005	Thorium	Metal Box	4'x4'x7'	640	71	65,280
	006	Residues	Metal Box	4'x4'x7'	2,866	409	409,730
	007	Contaminated Trash	Sea/Land	8'x8'x20'	10	5	13,490
	TOTALS					689	703,446

TABLE 3