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DOCUMENTATION SUPPORTING FEMP REMOVAL OF WASTE INVENTORIES LOW LEVEL RADIOACTIVE WASTE AND THORIUM MANAGEMENT

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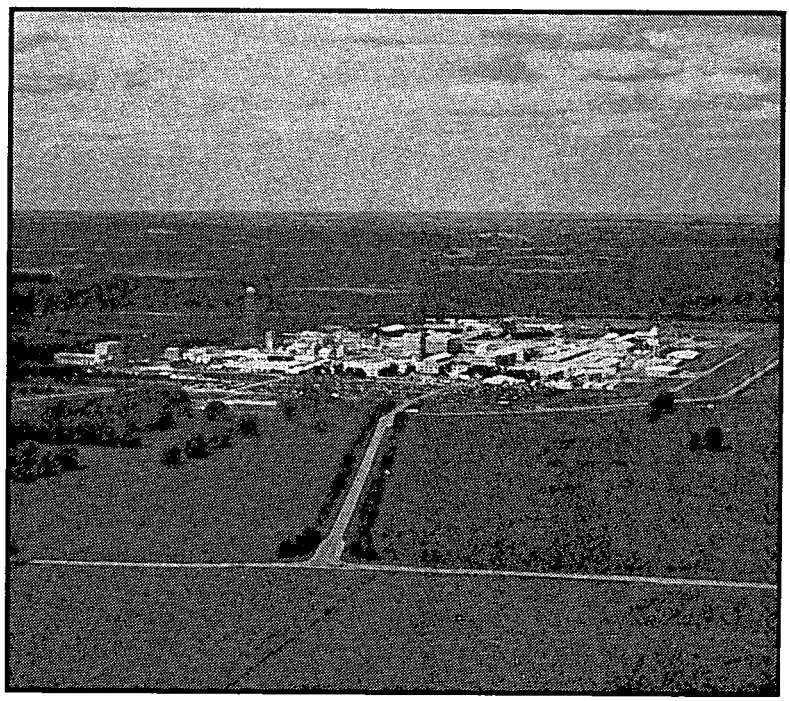
Documentation Supporting Fernald Environmental Management Project Removal of Waste Inventories

Low Level Radioactive Waste
and
Thorium Management Program
Removal Action Number 9



June 1992

INDEX

A. Program Overview

B. Attachment

I. General Supporting Documentation

- U.S. Department of Energy Order 5820.2A
- PP-0103, Site Document System
- SDI-100, Site Document System Index
- SSOP-0023, Deviation and Corrective Action Reporting
- RM-FMPC-0002, Centralized Training Program Manual *
- RM-0012, WEMCO Quality Assurance Program Plan *
- FMPC Site Health and Safety Plan *
- PL-3010, FY-1992 Environmental Restoration and Waste Management Site Specific Plan *
- Thorium Overpacking Project Specific Health and Safety Plan for Buildings 67, 68, and the Middle Bay of 64

II. Implementing Procedures

Step 1. Generate Waste

- FMPC-0307, Control and Accountability of Nuclear Materials
- SOP 1-C-604, Inspection and Evaluation of Containerized Low Level Radioactive Waste (LLRW)

Step 2. Sample and Characterize

- SOP 1-C-101, Sampling Residue and Waste Materials
- SOP 20-C-805, Sampling Drummed Waste for Hazardous Identification
- SSOP-002, Completing the Material Evaluation Form

Step 3. Package for Storage

- SSOP-0044, Controlling the Generation of Construction/ Maintenance Waste
- PP-0314, Packaging, On-Site Movement and Off-Site Shipment of Material
- SOP 20-C-600, Overpacking Defective Containers
- RM-0005, FEMP Lot Marking and Color Coding System
- SOP 20-C-618, Completing the Low Level Radioactive Waste Container Data Sheet

Step 4. Storage

- Drum Management Plan
- SOP 1-C-608, Storage of Radioactive Material

Step 5. Package for Disposal

- SSOP-0024, Packaging Low Level Radioactive Waste (LLRW) for Off-Site Disposal
- EQP 12.03, Certification of Waste Package Examination and Sealing for Off-Site Shipment

Step 6. Loading and Transport

- SOP 1-C-602, Low Level Radioactive Waste (LLRW) Shipment Preparation
- PO-D-035, Shipment of Low Level Radioactive Waste Requirements
- SP-P-35-009, Radioactive Material Shipping and Receiving
- EQP-12.04, Certification of Loading and Shipment of Low Level Radioactive Waste

Step 7. Disposal Facility Requirements and Criteria

- NVO-325, Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements *

Step 8. Fernald Site Obtains Approval to Ship for Disposal

- Waste Application
- FMPC-707, Audit Program

Step 9. Waste Analysis and Characterization Plans Developed and Implemented

- SOP 1-C-101, Sampling Residue and Waste Materials
- FMPC-2185, Sampling Plan for Drummed Waste at the FMPC *

Step 10. Waste Minimization Plans Developed

- Waste Minimization Plan

Step 11. Waste Minimization Activities Fully Implemented

- SOP 20-C-607, Segregation of Wooden Pallets

III. References

- 49 Code of Federal Regulations *

*NOTE: Copies will be made available on request.

JA

REMOVAL ACTION NUMBER 9
REMOVAL OF WASTE INVENTORIES

LOW LEVEL RADIOACTIVE WASTE AND THORIUM MANAGEMENT PROGRAM

Introduction

In May 1991, the USEPA, OEPA, 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 Substances Pollution Contingency Plan (NCP). This removal action is defined as Number 9 termed Removal of Waste Inventories, under the draft language of the Consent Agreement.

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. This deliverable has been compiled to fulfill the terms of the agreement for Removal Action Number 9 pertaining to an October 1, 1991, deliverable for: (1) current LLRW management procedures; and (2) thorium management procedures for materials "to be overpacked" for storage and/or future shipment. LLRW and thorium management procedures have 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 of revised procedures will be issued in June of each year.

Provided with this submittal is a brief background on the history of the LLRW Shipping and Thorium Management Program and the Consent Agreement negotiations, an overview of the pertinent site policies and procedures, and a compilation of significant facility documentation controlling the ongoing program.

Background

The FEMP LLRW Management Program has been operational at the facility since production startup in 1950. The FEMP also served as the DOE repository for thorium material during the facility's production operation history. As a consequence of production operations, considerable quantities of LLRW and thorium were generated during the site production mission. Until 1984, these LLRW and thorium materials were placed into a series of waste pits and silos located on the western portion of the facility. In 1984, a significant portion of these newly generated waste materials were redirected from the pit area to containers as a result of the lack of capacity in the disposal units. In 1986, essentially all activities involving placement of LLRW materials into the pits were terminated. At that time and continuing to date, all currently generated LLRW and thorium materials were containerized and stored for future disposition. Currently generated waste at the FEMP is presently limited to waste materials derived from activities relating to cleanup due to the cessation of production operation.

In August 1985, the FEMP initiated an off-site shipment program involving the transfer of LLRW waste inventories to the Nevada Test Site (NTS). This shipment program involves the characterization, treatment, packaging, and transport of waste in a manner which is in full compliance with DOE Orders, DOT Shipping Requirements, and NTS Waste Acceptance Criteria. Focus is currently being applied to gain authorization to ship FEMP thorium inventories

Background (cont)

to NTS for disposal. Currently, activities are underway to characterize, repack/overpack, and stage existing thorium inventories in a configuration which is readily available for shipment upon receipt of formal approval to do so. To date, approximately 340,000 drum equivalents (DEs) of LLRW have been transferred to NTS for disposal from the FEMP. 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 10,600 DEs of thorium materials. Approximately 1,650 overpacked containers of thorium residues are presently stored in Building 60 at the FEMP in a ready-to-ship configuration.

These remaining waste inventories are stored within the FEMP former Production Area, 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 Operable Unit 3 of the sitewide Remedial Investigation/Feasibility Study (RI/FS) being conducted pursuant to the Consent Agreement.

In May 1991, negotiations were initiated between representatives of DOE, OEPA, and USEPA regarding a possible modification to the Consent Agreement. In these negotiations, it was agreed that DOE would submit a compilation of existing procedures and other documentation to support the reconfiguration of the existing LLRW and Thorium Management Program into a removal action under the terms of the Consent Agreement and would continue ongoing activities consistent with current procedures while the USEPA was reviewing the submittal. This position was established in an attempt to provide for the continuity of ongoing site operations, the elimination of unnecessary or duplicative documentation and the desire not to adversely impact ongoing cleanup initiatives. Consistent with this position, it was agreed that additional procedures and policies developed to govern planned work activities or modifications to prior submitted procedures would be provided as a supplement to this package. Specifically, the DOE has agreed to supplement this package and to incorporate any additional procedures to support ongoing or proposed work activities as part of a subsequent deliverable submitted pursuant to Phase III Removal Actions under the Consent Agreement. Additionally, it was agreed as part of the negotiation process, that procedural or policy changes required to the program resultant from USEPA and OEPA comments will be expeditiously transitioned into ongoing operations so as not to adversely impact cleanup progress.

Low Level Radioactive Waste and Thorium Management Program

The FEMP LLRW and Thorium Management Program represents a cohesive management approach enveloping the characterization, packaging, storage, transport, and disposal of inventoried LLWR and thorium materials. Work elements are conducted and controlled through a hierarchy of site documentation. Figure 1 presents a brief summary of the hierarchy of documentation supporting site operations at the FEMP. 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. A copy of the DOE Order is provided in the attachment.

Low Level Radioactive Waste and Thorium Management Program (cont)

As identified in Figure 1 and as further described in the Attachment (Reference PP-0103), management directives and supporting organization charters are established to fulfill driving regulatory or management requirements. Consistent with the management directives, site level documentation (i.e., Documentation governing the conduct of work across the site, as opposed to discrete departments) is compiled to establish the interrelationship and requirements of site organizations. On the basis of the site level documentation, individual supporting departments typically prepare specific procedures detailing the conduct of operations to fulfill a program requirement as defined in the site level documentation.

The hierarchy of documentation supports every aspect of operation at the FEMP including, but not limited to, health and safety, training, quality control and assurance, laboratory services and waste management operations. Since the focus of this submittal 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 have not been included within this submittal. A Site Document Index is provided in the attachment providing a listing of these available site documents. Supporting documentation other than that specifically provided in the attachment is available upon request.

Figure 2 provides a simplified logic diagram defining the interrelationship between the major components of the Waste Management Program. Table 1 presents a summarization of the key site documentation supporting each of these major program components. Copies of the current version, effective June 1, 1992, of this key site documentation, except as specifically defined within Table 1, are provided in the attachment.

It should be recognized that revisions to existing policies and procedures to respond to evolving program needs or unique site conditions is an integral part of a successful program. The documentation provided in the Attachment 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.

Integration With Operable Unit 3 RI/FS

As previously noted, the existing FEMP LLRW and thorium inventory lies within the purview of Operable Unit 3 of the ongoing sitewide RI/FS. Consistent with the provisions of the NCP, removal actions shall be appropriately integrated with the ongoing RI/FS so as to ensure appropriate documentation is provided into the Administrative Record, to record actions taken which may affect preexisting site conditions relative to the Operable Unit, and the known source term associated therewith, and to ensure the removal action supports potential final remedial objectives. Within the FEMP Administrative Record, a separate file will be established for placement of supporting documentation pertaining to Removal of Waste Inventories Removal Action Number 9. Included in the Administrative Record file will be all key program documentation, including this Work Plan submittal consisting of current LLRW and Thorium Management Program work procedures, and a compilation of appropriate materials disposition/off-site shipping records for LLRW and thorium materials encompassed within this Removal Action.

The implementation of Removal of Waste Inventories - LLRW and Thorium Management Program activities clearly supports the remedial objectives for Operable Unit 3 by providing a necessary preliminary step for preparation of these areas for subsequent remedial activities.

Integration with Operable Unit 3 RI/FS (cont)

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 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 of 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
- W CORPORATE DIRECTIVES
- CONTRACTUAL AGREEMENTS

POLICY & MANAGEMENT DIRECTIVES

- DEPARTMENT & COMMITTEE CHARTERS
- POLICY & PROCEDURES

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.

SITE OPERATING & INTERFACING DOCUMENTS

- PLANS
- INFORMATION DOCUMENTS
- REQUIREMENTS DOCUMENTS
- SITE OPERATING DOCUMENTS

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

INFORMATION DOCUMENT - INFORMATION COMPLIED 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 DOCUMENTS

- DEPARTMENT PROCEDURES
- PLANS
- MANUALS

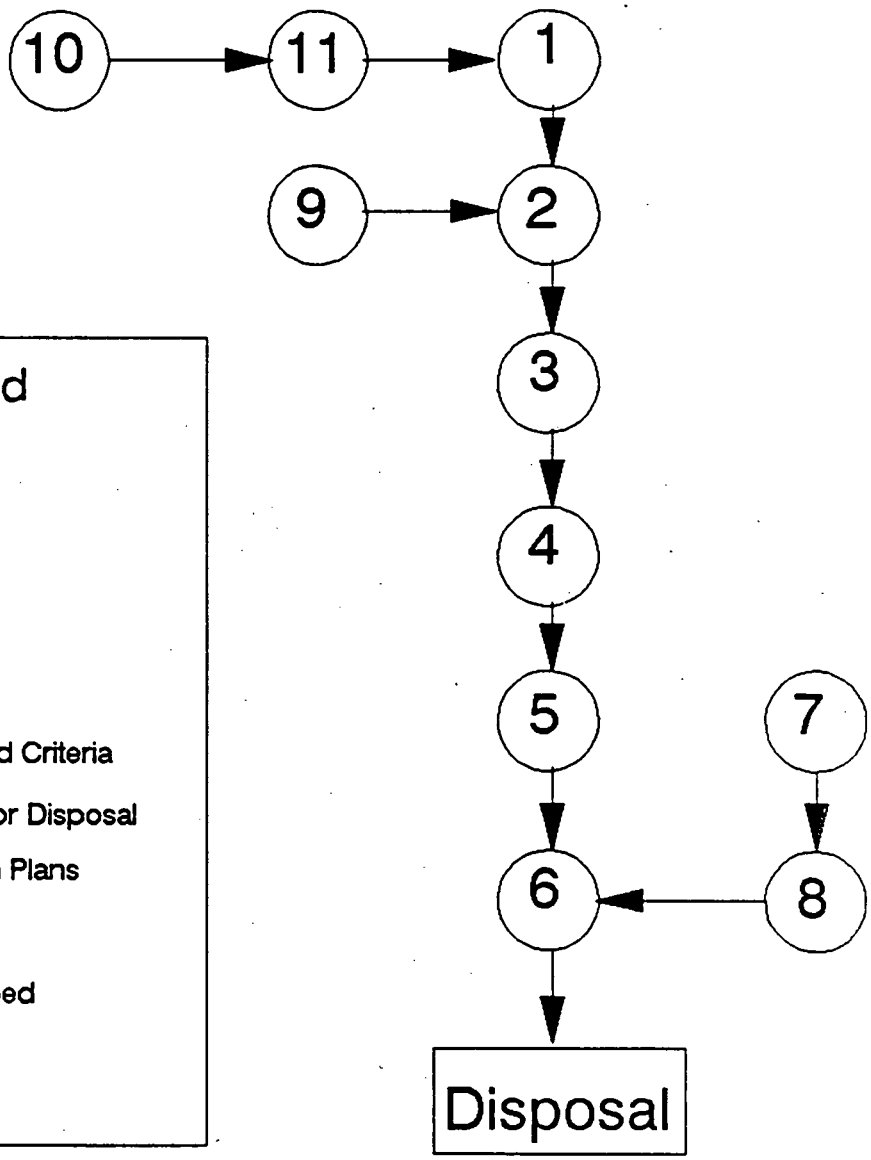
DEPARTMENT PROCEDURE - A PROCEDURE THAT PROVIDES INSTRUCTIONS TO ONLY ONE WEMCO ORGANIZATION.

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.

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

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GENERAL SUPPORTING DOCUMENTATION

	DOCUMENTATION	COMMENTS
General Supporting Documents	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.S. 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.

	DOCUMENTATION	COMMENTS
General Supporting Documents (Continued)	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.

STEPS	PROCEDURES	COMMENTS
Implementing Procedures Step 1. Generate Waste	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.
Step 2. Sample and Characterize	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 compling the Material Evaluation Form to classify materials as RCRA or NON-RCRA.
Step 3. Package for Storage	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.

STEPS	PROCEDURES	COMMENTS
	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.
Step 4. Storage	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.
Step 5. Package for Disposal	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.
Step 6. Loading and Transport	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.

STEPS	PROCEDURES	COMMENTS
	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 procedures 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.
Step 7. Disposal Facility Requirements and Criteria	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. 4, 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.)
Step 8. Fernald Site Obtains Approval to Ship for Disposal	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.

STEPS	PROCEDURES	COMMENTS
	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.
Step 9. Waste Analysis & Characterization Plans Developed & Implemented	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.
Step 10. Waste Minimization Plans Developed	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.
Step 11. Waste Minimization Activities Fully Implemented	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.

B.

4A

ATTACHMENT

DOCUMENTATION SUPPORTING FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

LOW LEVEL RADIOACTIVE WASTE AND THORIUM WASTE MANAGEMENT PROGRAM

DEC 01 1988

U.S. Department of Energy

Washington, D.C.

PROPERTY OF
EMPC

3511

ORDER

DOE 5820.2A

9-26-88

SUBJECT: RADIOACTIVE WASTE MANAGEMENT

1. PURPOSE. To establish policies, guidelines, and minimum requirements by which the Department of Energy (DOE) manages its radioactive and mixed waste and contaminated facilities.

2. CANCELLATION. DOE 5820.2, RADIOACTIVE WASTE MANAGEMENT OF 2-6-84.

3. SCOPE. The provisions of this Order apply to all DOE elements and, as required by law and/or contract and as implemented by the appropriate contracting officer, all DOE contractors and subcontractors performing work that involves management of waste containing radioactivity and/or radioactively contaminated facilities for DOE under the Atomic Energy Act of 1954, as amended (Public Law 83-703).

4. EXCLUSION. This Order does not apply to the management by the Department of commercially generated spent nuclear fuel or high-level radioactive waste, nor to the geologic disposal of high-level waste produced by the Department's activities and operations. Such materials are managed by the Office of Civilian Radioactive Waste Management under the requirements of the Nuclear Waste Policy Act of 1982, as amended (Public Law 97-425).

5. POLICY. 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. The generation, treatment, storage, transportation, and/or disposal of radioactive wastes, and the other pollutants or hazardous substances they contain, shall be accomplished in a manner that minimizes the generation of such wastes across program office functions and complies with all applicable Federal, State, and local environmental, safety, and health laws and regulations and DOE requirements.

6. REFERENCES. (See Attachment 1.)

7. DEFINITIONS. (See Attachment 2.)

8. RESPONSIBILITIES.

   a. Assistant Secretary for Defense Programs (DP-1) has authority for establishing policy for the management of DOE waste and assuring that DOE waste generated by operations and activities under DP-1 cognizance, or any other waste within the purview of DP-1, is managed according to the requirements of this Order. DP-1 also has general responsibility for assuring that

DISTRIBUTION:

All Departmental Elements

INITIATED BY:

Office of Defense Waste and Transportation Management

DP-1 programmatic decisions include waste management considerations when appropriate. Specific responsibilities include:

(1) Assuring the safe storage and disposal of all DOE waste other than that managed by NE-1 and RW-1;

(2) Implementing new and alternative technologies and processes to improve management of DP waste;

(3) Developing and operating the Waste Isolation Pilot Plant, a facility near Carlsbad, New Mexico, for conducting research and development to demonstrate the safe disposal of radioactive waste from defense activities and programs of the United States exempted from regulation by the Nuclear Regulatory Commission;

(4) Conducting research and development for DOE waste transportation systems and providing for safe, efficient, and economic transport of materials, pursuant to DOE 1540.1;

(5) Managing DP contaminated facilities, including those that are surplus to program needs;

(6) Assuring that the environmental, safety, health, transportation, quality assurance, unusual occurrence, construction project management, real estate management, and facility design requirements set forth in DOE Orders are implemented for DP-1 waste management programs; and

(7) Supporting the information needs of the Integrated Data Base program on defense program activities and jointly managing and funding the program in cooperation with NE-1 and RW-1 (see Attachment 1, page 3, paragraph 23).

b. Director of Defense Waste and Transportation Management (DP-12) is charged with carrying out DP-1 waste management responsibilities for oversight of the waste management complex, for interpreting waste management policy, and for implementing the requirements of this Order for waste management facilities and operations funded by DP-12. Specific responsibilities include:

(1) Management of storage, treatment, and disposal operations for defense waste;

(2) Managing defense contaminated facilities that are excess to programmatic needs;

(3) Reviewing and approving new or alternative waste management practices;

TABLE OF CONTENTS

Page

CHAPTER I HIGH-LEVEL WASTE

1. PURPOSE I-1
2. POLICY I-1
3. REQUIREMENTS I-1
   a. Design I-1
   b. Storage Operations - Doubly Contained Systems I-2
   c. Storage Operations - Singly Contained Tank Systems I-6
   d. Disposal I-7

CHAPTER II MANAGEMENT OF TRANSURANIC WASTE

1. PURPOSE II-1
2. POLICY II-1
3. REQUIREMENTS II-1
   a. Waste Classification II-1
   b. Transuranic Waste Generation and Treatment II-2
   c. Transuranic Waste Certification II-3
   d. Transuranic Waste Packaging II-4
   e. Temporary Storage at Generating Sites II-4
   f. Transportation/Shipping to the Waste Isolation Pilot Plant II-5
   g. Interim Storage II-6
   h. Waste Isolation Pilot Plant II-9
   i. Buried Transuranic-Contaminated Waste II-10
   j. Quality Assurance II-11

CHAPTER III MANAGEMENT OF LOW-LEVEL WASTE

1. PURPOSE III-1
2. POLICY III-1
3. REQUIREMENTS III-1
   a. Performance Objectives III-1
   b. Performance Assessment III-2
   c. Waste Generation III-2
   d. Waste Characterization III-3
   e. Waste Acceptance Criteria III-3
   f. Waste Treatment III-4
   g. Shipment III-5
   h. Long Term Storage III-5
   i. Disposal III-6

TABLE OF CONTENTS (CONTINUED)

Page

j. Disposal Site Closure/Post Closure III-9
k. Environmental Monitoring III-9
l. Quality Assurance III-10
m. Records and Reports III-10

CHAPTER IV MANAGEMENT OF WASTE CONTAINING NATURALLY OCCURRING AND ACCELERATOR PRODUCED RADIOACTIVE MATERIAL

1. PURPOSE IV-1
2. POLICY. IV-1
3. REQUIREMENTS. IV-1
a. Waste Management IV-1
b. Quality Assurance IV-2

CHAPTER V DECOMMISSIONING OF RADIOACTIVELY CONTAMINATED FACILITIES

1. PURPOSE V-1
2. POLICY. V-1
3. REQUIREMENTS V-1
a. General V-1
b. Facility Design V-2
c. Post-Operational Activities V-2
d. Decommissioning Project Activities V-3
e. Quality Assurance V-6

CHAPTER VI WASTE MANAGEMENT PLAN OUTLINE

1. PURPOSE VI-1
2. DISCUSSION. VI-1
3. FORMAT FOR WASTE MANAGEMENT PLANS VI-1
a. Executive Summary VI-1
b. General Site Information VI-2
c. Radioactive and Mixed Waste Management VI-2
d. Hazardous Waste Management (DP Facilities) VI-3
e. Schedule and Cost Summary VI-4
f. Environmental Monitoring Programs VI-4
h. Related Subjects VI-4
ATTACHMENT VI-I - WASTE MANAGEMENT DOCUMENTATION REQUIREMENTS VI-5

(4) Conducting research and development for DOE waste transportation systems and providing for safe, efficient, and economic transport of materials, pursuant to DOE 1540.1;

(5) Conducting independent health, safety, and quality assurance audits of field waste management organizations, in cooperation with EH-1, to assess compliance with the requirements of this Order;

(6) Issuing, in consultation with EH-1, approval of exemptions from the requirements of this Order (paragraph 9) that are proposed by other Headquarters or field organizations;

(7) Issuing in consultation with EH-1 and Headquarters program organizations updated waste management guidance; and

(8) Approving documents, reports, and plans, as required by this Order, for DP programs and activities.

c. Director of Civilian Radioactive Waste Management (RW-1) is responsible for selected research and development, siting, construction, operation, and management activities assigned to the Secretary of Energy by the Nuclear Waste Policy Act of 1982 (Public Law 97-425) for the interim storage and disposal of high-level waste and spent nuclear fuel. Specific responsibilities include the following:

(1) The long-term care, in cooperation with NE-1, of closed commercial low-level waste sites transferred to DOE;

(2) Lead responsibility, in cooperation with NE-1 and DP-1, for the Integrated Data Base program (see Attachment 1, page 3, paragraph 23);

(3) Assurance that the requirements of DOE Orders are met for all waste management activities under RW-1 purview; and

(4) Independent health, safety, and quality assurance audits of field waste management organizations in cooperation with EH-1, to assess compliance with the requirements of this Order.

d. Assistant Secretary for Nuclear Energy (NE-1) is responsible for assuring that waste generated by operations funded by NE-1 is managed according to the requirements of this Order and that NE-1 program decisions include waste management considerations, as appropriate. Specific responsibilities include:

(1) Managing DOE wastes from NE-1 operations and activities, including the breeder reactor, space nuclear, naval reactor, and remedial action programs, as well as the Three Mile Island and West Valley projects;

(2) Managing waste generated by DOE enrichment operations and disposed at sites located at the Oak Ridge, Portsmouth, and Paducah gaseous diffusion plants;

(3) Managing any greater than Class C low-level waste, as defined in Section 3(b)(1)(D) of Public Law 99-240, which may be accepted by the Department for disposal in cooperation with DP-1;

(4) Developing and implementing alternative technologies and processes to support storage and disposal of waste or spent fuel generated by NE-1 operations;

(5) Managing NE-1 contaminated facilities, including those that are surplus to program needs, and waste storage/disposal sites;

(6) Developing and implementing commercial applications for waste byproducts;

(7) Assuring that environmental, safety, health, transportation, quality assurance, unusual occurrence, construction project management, real estate management, and facility design requirements set forth in DOE Orders, are implemented for NE-1 waste management programs;

(8) Conducting independent health, safety, and quality assurance audits of field waste management operations in cooperation with EH-1 to assess compliance with the requirements of this Order; and

(9) Supporting the information needs of the Integrated Data Base program on civilian nuclear program activities in cooperation with DP-1 and RW-1 (see Attachment 1, page 3, paragraph 23).

e. Assistant Secretary for Environment, Safety and Health (EH-1) is responsible for providing an independent overview of DOE radioactive waste management and decommissioning programs to determine compliance with DOE environment, safety, and health requirements and applicable Environmental Protection Agency (EPA) and state regulations. Specific responsibilities include:

(1) Advising the Secretary of the status of Departmental compliance with the requirements of this Order and applicable provisions of DOE 5480.1B, and EH Orders.

(2) Conducting independent appraisals and audits of DOE waste management and decommissioning programs consistent with the requirements of DOE 5482.1B.

(3) Reviewing site Waste Management Plans and Decommissioning Project Plans with regard to compliance with DOE environment, safety, and health requirements.

f. Director, Naval Nuclear Propulsion Program: Executive Order 12344, statutorily prescribed by PL 98-525 (42 USC 7158 note), establishes the responsibilities and authority of the Director, Naval Nuclear Propulsion Program (who is also the Deputy Assistant Secretary for Naval Reactors within the Department) over all facilities and activities which comprise the Program, a joint Navy-DOE organization. The policy principle promoted by these executive and legislative actions is cited in the Executive Order as "...preserving the basic structure, policies and practices developed for this Program in the past...". Accordingly, The Naval Propulsion Program is exempt from the provisions of this Order. The Director shall maintain an environmental protection program to assure compliance with applicable environmental statutes and regulations. The Director and EH-1 shall exchange information and cooperate as appropriate to facilitate exercise of their respective responsibility.

g. Directors of other Headquarters Program Organizations are responsible for implementing the requirements of this Order for all DOE waste generated by their programs until it is transferred to a DOE or licensed storage/disposal site. For all contaminated facilities under their jurisdiction, they are responsible for assuring that their programmatic decisions include waste management considerations, as appropriate, and for implementing the requirements of other applicable DOE Orders for their waste management programs.

h. Office of General Counsel (GC-1) provides legal advice to program organizations regarding DOE waste management and decommissioning activities involving DOE-owned and privately owned sites; renders legal opinion on DOE authority to undertake remedial action and other waste management activities; and renders legal opinions on, and concurs in, program actions to comply with the National Environmental Policy Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Superfund Amendments and Reauthorization Act, and other legal authorities in conjunction with proposed waste management and decommissioning activities.

i. Assistant Secretary, Management and Administration (MA-1) is responsible for providing contractual and business advice to program organizations regarding DOE waste management activities, including use of DOE management and operating contractors in such activities.

j. Heads of Field Organizations are responsible for all activities that affect the treatment, storage, or disposal of waste in facilities under their jurisdiction regardless of where the waste is generated. Heads of field organizations with treatment, storage or disposal facilities responsibility have the authority for establishing waste management requirements at that facility (e.g., setting waste acceptance criteria, waste certification, verification of contents of waste shipped or to be shipped, concurring in waste reduction plans). In addition, they are responsible for assuring that the day-to-day waste management and surplus facility

operations at their sites are conducted in compliance with the requirements of this Order and comply with all applicable Federal, State, and local statutes. Specific responsibilities include the following:

(1) Preparing annual updates of the Waste Management Plans for all operations under their purview according to the format in the Waste Management Plan Outline, Chapter VI. These Plans shall be submitted in December of each year and be distributed to DP-12, EH-1, and other appropriate Headquarters organizations for review and comment.

(2) Preparing supplements to this Order that identify specific detailed requirements for waste management practices and procedures conducted at their sites.

(3) Overseeing fiscal responsibility for transporting waste and establishing of fees to recover the incremental costs for storage and disposal of DOE waste at their sites.

(4) Establishing waste acceptance criteria and reviewing waste minimization plans of other field organization's facilities that generate radioactive, hazardous, or mixed waste that will be treated, stored or disposed of at facilities under their purview.

(5) Auditing any waste generating organization that ships waste to their sites for treatment, storage, or disposal to assure compliance with established waste acceptance criteria.

(6) Maintaining environmental, safety, and health programs for all DOE waste management operations under their purview.

(7) Managing contaminated facilities under their purview according to the requirements of this Order and guidance provided by Headquarters program offices, providing program secretarial officers with the necessary characterizational and engineering data for contaminated facilities, and developing site-specific priorities, schedules, and costs for remedial actions.

(8) Assuring that the requirements of the Order, applicable to contractors and subcontractors whose contracts fall within the scope of the Order, are properly reflected in the contract document.

(9) Defining and assuring that required quality assurance activities are established and implemented for all waste management activities under their purview, pursuant to the requirements of DOE 5700.6B and reporting unusual occurrences pursuant to the requirements of DOE 5000.3.

(10) Providing information, as requested, to the Integrated Data Base Program, Oak Ridge National Laboratory, for all types of waste under

their purview, including: high-level waste; transuranic waste; low-level waste; naturally occurring and accelerator produced radioactive material; mixed waste; and wastes from decommissioning activities (see Attachment 1, page 3, paragraph 23).

k. Manager of Albuquerque Operations Office is responsible, in addition to the responsibilities identified in paragraph 8j, for use of certified packaging, standard containers, transportation, waste acceptance criteria, and all other aspects related to transuranic waste emplacement at the Waste Isolation Pilot Plant. Within the Albuquerque Operations Office, a standing committee, the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee, is responsible for review, audit, and approval of generator transuranic waste certification programs and activities. The Manager of the Albuquerque Operations Office, as Head of the Waste Isolation Pilot Plant project office, also has responsibility for the design, construction, technology development, and operational activities leading to permanent isolation of transuranic waste from the biosphere.

9. EXEMPTIONS. Exemptions from the requirements of this Order may be granted only with the approval of DP-12 in consultation with EH-1. New or alternate waste management practices that are based on appropriate documented safety, health protection, and economic analyses may be proposed by field organizations and adopted with the approval of DP-12 and EH-1.

10. IMPLEMENTING PROCEDURES AND REQUIREMENTS. Within 6 months of the date of issuance of this Order, Heads of Field Elements shall prepare and submit to appropriate Headquarters program organizations an implementation plan describing schedules, costs, and quality assurance activities for compliance with the requirements of this Order with copies to EH-1 for review and comment. Specific guidance for the plan will be issued by DP-12 under separate cover. Thereafter, the status of compliance with the requirements of this Order shall be reported to the appropriate Headquarters program organization in the annual update of the Waste Management Plans.

11. CLEARANCE UNDER THE PAPERWORK REDUCTION ACT OF 1980. This directive has been determined to contain information collections under the provisions of 5 CFR 1320, "Controlling Paperwork Burdens on the Public." The Office of Management and Budget (OMB) has issued a clearance to the Department (OMB No. 1910-0900) for these information collections.

BY ORDER OF THE SECRETARY OF ENERGY:

LAWRENCE F. DAVENPORT
Assistant Secretary
Management and Administration

CHAPTER I

HIGH-LEVEL WASTE

1. PURPOSE. To establish policies and guidelines for managing the Department of Energy's (DOE) high-level waste and any other materials which, because of their highly radioactive nature (level of health risk, longevity of health risk and thermal activity), require similar handling. (Unless demonstrated to the contrary, all high-level waste shall be considered to be radioactive mixed waste and subject to the requirements of the Atomic Energy Act, as amended, and the Resource Conservation and Recovery Act.)

2. POLICY. All high-level waste generated by DOE operations shall be safely stored, treated, and disposed of according to requirements set forth in this Order. Storage operations shall comply with applicable EPA standards and EPA/State regulations. Geologic disposal shall comply with both Nuclear Regulatory Commission regulations and EPA standards.

3. REQUIREMENTS.

   a. Design.

      (1) Requirements for New Facilities.

         (a) Design objectives for new facilities will assure protection of the public and operating personnel from hazards associated with normal high-level waste operations, accident conditions, and the effects of natural phenomena. Other objectives are compliance with DOE policies regarding nuclear safety, quality assurance, fire protection, pollution control, and safeguards and security protection for high-level waste and protection of essential operations from the effects of potential accidents.

         (b) Designs for new storage and treatment facilities shall meet the requirements of DOE 6430.1, applicable EH Orders and 40 CFR 264.

         (c) Designs for new storage facilities shall incorporate features to facilitate retrieval capability.

      (2) Design Review for Existing Facilities. Uniform requirements for the preparation of safety analysis reports for high-level waste operations, detailed in DOE 5481.1B, include the review of existing operational facilities based on current technical criteria. When hazards are identified that should be eliminated, controlled, or mitigated, appropriate upgrading, actions in accordance with paragraph 3a(1) above, shall be identified and implemented according to the requirements of DOE 5481.1B.

b. Storage Operations - Doubly Contained Systems.

(1) Waste Characterization.

(a) Liquid and solidified high-level waste shall be characterized consistent with radiation protection requirements to determine its hazardous components, per 40 CFR 261 and 40 CFR 264. Characterization shall satisfy requirements of paragraph 3b(1)(b) and may reflect knowledge of waste generating processes, laboratory testing results, and/or the results of periodic sampling and analysis. Examples of required information are chemical composition, physical properties, radionuclide concentrations, and pH.

(b) Waste characteristics and compatibility information shall be documented in a safety analysis report (see DOE 5481.1B) and be used as a basis for designing new facilities.

(2) Storage and Transfer Operations.

(a) All new high-level waste handling, transfer, and storage facilities (e.g., tanks, bins, pipelines, and capsules) shall be doubly contained.

(b) Singly contained pipelines may be used routinely for liquid waste that has a total radioactivity concentration of less than 0.05Ci/gal (4.9×10^{11}Bq/m^3). They may be used on a temporary basis for higher activity waste, if appropriate design and administrative controls are in place to mitigate adverse effects from a pipeline failure.

(c) Leaking waste storage systems shall not be used to receive waste unless secondary containment is maintained (e.g., liquid level maintained below leak point) and it can be shown with the support of formal documentation (e.g., Safety Analysis Reports, Operational Safety Requirements, Operating Standards) that temporary operation can be performed without releasing radioactive liquid to the environment.

(d) Secondary containment systems shall be capable of containing liquids that leak into them from the primary system and shall be equipped with transfer capability to retrieve the leaked liquid. Secondary containment systems for solidified high-level waste shall provide for physical isolation of the waste from the environment.

(e) To the extent practical, waste shall be segregated by type (sludge, salt, high activity, and low activity) to make accessibility for future processing easier.

(f) Where required, ventilation and filtration systems shall be provided to maintain radionuclide releases within the guidelines specified in DOE 5481.1B and applicable EH Orders. Ventilation systems shall be provided where the possibility exists for generating flammable and explosive mixtures of gases (e.g., hydrogen/air or organics/air).

(g) Facilities using cathodic corrosion protection systems shall include engineered features that protect against abnormal conditions such as stray currents or system failure. The cathodic protection systems shall be calibrated annually, and all sources of impressed current shall be inspected and/or tested at least every other month.

(h) Engineering controls shall be incorporated to provide liquid volume inventory data and to prevent spills, leaks, and overflows from tanks or containment systems. Examples are level-sensing devices, liquid level alarms, and maintenance of sufficient freeboard. The high-level waste shall be stored at pressures lower than those of ancillary systems (e.g., cooling water).

(i) Nuclear criticality safety considerations and controls shall be evaluated for normal operations and, before any significant operational changes are made, to protect against an uncontrolled nuclear criticality incident (e.g., dissolution of sludges for removal from tank).

(j) Each facility shall utilize remote maintenance features and other appropriate techniques to minimize personnel radiation exposure in accordance with DOE 5481.1B.

(k) Upon loss and subsequent recovery of normal electrical power, high-level waste transfer equipment shall not have the capability to restart without active operator action.

(3) Monitoring, Surveillance, and Leak Detection.

(a) Monitoring and leak detection capability shall be incorporated in the engineering systems (e.g., liquid level sensing devices and alarms for high-level waste liquid systems) to provide rapid identification of failed containment, and measurement of abnormal temperatures. The following, at a minimum, shall be monitored: temperature; pressure; radioactivity in ventilation exhaust; and liquid effluent streams associated with high-level waste facilities. Where the possibility exists for the generation of flammable and explosive mixtures of gases, monitoring shall be conducted. For facilities storing liquid high-level waste, the following should also be monitored: liquid levels; sludge volume; tank chemistry; condensate and cooling water.

(b) Leak detection systems (e.g., conductivity probes) shall be designed and operated so that they will detect the failure of the primary containment boundary, the occurrence of waste release, or accumulated liquid in the secondary containment system.

(c) A method for periodically assessing waste storage system integrity (e.g., coupons for corrosion testing, photographic and periscopic inspections, leak detectors, liquid level devices) shall be established, documented, and reported as required in the Waste Management Plan.

(d) Electrical monitoring and leak detection devices essential to safe operations shall be provided with backup power, as appropriate, to ensure operability under emergency conditions.

(e) Surface water systems associated with the high-level waste storage area shall be monitored according to applicable National Pollution Discharge Elimination System permits and EH Order requirements.

(f) A system of ground water or vadose zone monitoring wells meeting the Resource Conservation and Recovery Act requirements per 40 CFR 264 shall be installed, as a minimum, around clusters of liquid waste storage tanks.

(4) Contingency Actions.

(a) A tank or secondary containment system from which there has been a leak or a spill to the surrounding soil, or which is otherwise unfit for use, shall be removed from service until conditions can be evaluated fully.

(b) Upon detection of released radioactive materials, steps shall be taken to prevent further migration of the release to soil or surface water. Major contamination in the soil shall be removed or stabilized unless compliance with this requirement would cause greater harm to human health or the environment.

(c) If a release results from a spill and the integrity of the system is not damaged, the system may be returned to service as soon as action to correct the condition is completed.

(d) For emergency situations involving liquid high-level waste, spare capacity with adequate heat dissipation capability shall be maintained to receive the largest volume of liquid contained in any one tank. Adequate transfer pipelines also shall be maintained in operational condition. Interconnected tank farms with adequate transfer capabilities and spare capacity may be considered as a single tank farm for purpose of this requirement.

(e) A schedule and procedure shall be developed for monitoring, surveillance, and calibration checks. The frequency of these activities shall be based on the potential rate of equipment deterioration and the possibility of an environmental or human health incident, assuming that a malfunction from equipment failure or human error is not detected between checks. Schedules, procedures, and performance requirements shall be documented in the operating and maintenance documentation.

(f) Each high-level waste facility shall have response procedures for credible emergencies, as identified in the Safety Analysis Reports.

(5) Training.

(a) Operator training and qualification standards shall be developed and an up-to-date record of training status shall be maintained.

(b) Worker safety training must comply with the requirements of DOE 5480.1B and applicable EH Orders.

(6) Quality Assurance. Consistent with DOE Order 5700.6B, high-level waste operations shall be conducted in accordance with applicable requirements of the American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1 and other appropriate national consensus standards. (See Attachment 1, page 5, paragraph 48).

(7) Waste Treatment and Minimization.

(a) For the purpose of economy and enhancing the safety of high-level waste storage, processing programs shall be developed and implemented at the generating site to reduce the quantity of waste being sent to storage, and techniques (e.g., evaporation) shall be implemented to reduce further the waste volume in storage.

(b) Programs should be developed and implemented to treat high-level waste in storage to prepare it for eventual conversion to suitable disposal forms, as such forms are developed. This may include separation of high-level waste into other waste categories, such as transuranic waste or low-level waste.

(c) The chemistry of liquid high-level waste shall be adjusted to control corrosion within design limits for the storage system.

(d) Treatment reagents shall not be placed in a tank system without proven effective mitigative action if they could cause the tank, its ancillary equipment, or the containment system to rupture, leak, or otherwise fail.

(e) Waste generation and waste management systems that significantly change the chemical and physical forms of the waste shall be technically assessed to assure compatibility and retrievability.

c. Storage Operations - Singly Contained Tank Systems.

(1) Waste Characterization. The contents of singly contained tank systems shall be characterized consistent with radiation protection requirements and the needs associated with safe storage to determine its hazardous components consistent with 40 CFR 261, 40 CFR 264, and State requirements. Characterization may reflect knowledge of waste generating processes, laboratory testing results, and/or the results of periodic sampling and analysis.

(2) Storage and Transfer Operations.

(a) Singly contained tank systems shall not be used to store fresh high-level waste from fuel reprocessing operations except under emergency conditions as determined by the Operations Office Manager.

(b) Storage and transfer operations shall be conducted within the limits defined in the Safety Analysis Reports according to DOE 5481.1B.

(c) Engineered systems shall be incorporated to provide waste volume inventory data, consistent with the nature of the specific waste stored in singly contained tanks. Examples are surface level sensing devices and interstitial liquid level sensing devices.

(d) Singly contained pipelines: (see paragraph 3b(2)(b)).

(e) Where active ventilation is required, systems shall be provided to maintain radionuclide releases at the point of discharge within the guidelines specified in applicable EH Orders for offsite concentrations and DOE 5480.1B for onsite dose commitment considerations.

(f) Nuclear criticality safety (see paragraph 3b(2)(i)).

(g) Each facility shall use remote maintenance features and other appropriate techniques to maintain personnel radiation exposure as low as reasonably achievable.

(h) Electrical power loss (see paragraph 3b(2)(k)).

(3) Monitoring, Surveillance, and Leak Detection.

(a) Monitoring and surveillance capability shall exist to provide liquid volume, waste inventory data, and identification of failed containment.

(b) A method for periodically assessing waste storage tank integrity (e.g., coupons, photographic inspections, leak detectors, liquid level devices) shall be established and documented.

(c) Emergency power (see paragraph 3b(3)(d)).

(d) Monitoring wells (see paragraph 3b(3)(f)).

(4) Contingency Action.

(a) A contingency action plan shall be maintained to respond to spills or leaks and other credible emergencies as identified in the Safety Analysis Reports.

(b) Leak mitigation (see paragraph 3b(4)(b)).

(c) For emergency situations involving pumpable liquid in singly contained tanks, appropriate equipment (e.g., pumps) shall be maintained to provide removal of liquid.

(5) Training. (see paragraphs 3b(5)(a) and (b)).

(6) Quality Assurance. (see paragraphs 3b(6)(a)).

d. Disposal. New and readily retrievable waste shall be processed and the high-level waste fraction disposed of in a geologic repository according to the requirements of the Nuclear Waste Policy Act of 1982 (Public Law 97-425) as amended. Options for permanent disposal of other waste, such as single shell tank waste, shall be evaluated and include such methods as in-place stabilization as well as retrieval and processing, as required for new and readily retrievable waste. Analytic predictions of disposal system performance shall be prepared and incorporated in the National Environmental Policy Act process.

(1) New and Readily Retrievable. New and readily retrievable existing high-level waste shall be processed to a final immobilized form in facilities such as the Defense Waste Processing Facility and the Hanford Waste Vitrification Plant preparatory to permanent disposal in a deep geologic repository.

(a) Waste acceptance specifications and criteria based upon the requirements outlined in 10 CFR 60.113, 10 CFR 60.131(b)(7), 10 CFR 60.135, 10 CFR 71.87, and 40 CFR 191 shall be developed for

high-level waste forms prior to startup of facilities that generate the disposal waste form. Specifications and criteria shall be approved by RW-20 and DP-12 for Defense Programs high-level waste forms and by RW-20 and NE-20 for West Valley Demonstration Project product. As examples, specifications and criteria for the Defense Waste Processing Facility vitrified high-level waste form are documented in DOE/RW-0125; those for the West Valley Demonstration Project high-level waste form are documented in DOE/RW-0136.

(b) Interim storage for solidified high-level waste awaiting transport to the designated geologic repository shall comply with applicable requirements in paragraph 3b.

(2) Other Waste. High-level waste that is not readily retrievable shall be monitored periodically in situ. Field offices shall reevaluate the safety of such waste to determine the need for corrective measures as necessary. Options for permanent disposal of singly contained tank waste shall be evaluated and include such methods as in-place stabilization as well as retrieval and processing, as required for new and readily retrievable waste in paragraph 3d(1).

CHAPTER II

MANAGEMENT OF TRANSURANIC WASTE

1. PURPOSE. To establish policies and guidelines for managing DOE transuranic waste starting with its generation, continuing through closure of the Waste Isolation Pilot Plant, and finally the management of buried transuranic waste as defined in Attachment 1, page 3, paragraph 22. Transuranic wastes that are also mixed wastes are subject to the requirements of the Atomic Energy Act and the Resource Conservation and Recovery Act. Additionally, buried transuranic wastes are subject to the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act, and the Superfund Amendments and Reauthorization Act.

2. POLICY. Transuranic waste shall be managed to protect the public and worker health and safety, as well as the environment, and performed in compliance with applicable radiation protection standards and environmental regulations. Practical and cost effective methods shall be used to reduce the volume and toxicity of transuranic waste.

   a. Transuranic waste shall be certified in compliance with the Waste Isolation Pilot Plant-Waste Acceptance Criteria, placed in interim storage (if required), and sent to the Waste Isolation Pilot Plant.

   b. Transuranic waste that the Department of Energy has determined, with the concurrence of the EPA Administrator, does not need the degree of isolation provided by a geologic repository or, transuranic waste that cannot be certified or otherwise approved for acceptance at the Waste Isolation Pilot Plant, shall be disposed of by alternative methods. Alternative disposal methods shall be approved by DOE Headquarters (DP-12 and EH-1) and shall comply with the National Environmental Policy Act requirements and EPA/State regulations.

3. REQUIREMENTS.

   a. Waste Classification.

      (1) Any material that is known to be, or suspected of being contaminated with transuranium radionuclides shall be evaluated as soon as possible in the generating process, and determined to be either recoverable material, transuranic waste, low-level waste, mixed waste, or non-radioactive trash in order to avoid commingling the various material streams.

      (2) The lower concentration limit for transuranic waste (>100 nCi/g of waste) shall apply to the contents of any single waste package at the time of assay. The mass of the waste container including shielding shall not be used in calculating the specific activity of the waste.

(3) Radioactive wastes with quantities of transuranic radionuclides in concentrations of 100 nCi/g of waste or less shall be considered to be low-level waste, and shall be managed according to the requirements of Chapter III of this Order.

(4) Mixed transuranic waste:

(a) Mixed transuranic waste meeting the requirements of the Waste Isolation Pilot Plant-Waste Acceptance Criteria shall be sent to the Waste Isolation Pilot Plant.

(b) The Data Package prepared by the generators for the Waste Isolation Pilot Plant shall include information on the kinds and quantities of hazardous components contained in a waste package in accordance with applicable Resource Conservation and Recovery Act regulations.

(c) The determination whether the transuranic waste exhibits any hazardous characteristics or contains listed hazardous components may be based on knowledge of the waste generating process when the performance of a chemical analysis would significantly increase the radiation hazard to personnel.

b. Transuranic Waste Generation and Treatment.

(1) Technical and administrative controls shall be directed to reducing the gross volume of waste generated and/or the amount of radioactivity requiring disposal. Transuranic waste reduction efforts shall be based on the implementation of techniques such as process modification, process optimization, materials substitution, decontamination, assay of suspect waste, and new technology development. Volume reduction techniques, such as incineration, compaction, extraction, and shredding, shall be implemented wherever cost effective and practical. Treatment facilities shall be permitted by the appropriate regulatory authority.

(2) Transuranic waste shall be assayed or otherwise evaluated to determine the kinds and quantities of transuranic radionuclides present prior to storage. Additionally, hazardous waste components shall be estimated or analyzed, whichever is appropriate.

(3) Mixed transuranic waste shall be treated, where feasible and practical, to destroy the hazardous waste component.

(4) Transuranic waste that is classified for security reasons shall be treated to remove or destroy the classified characteristic(s) prior to certification. Declassification should be performed by the generator.

c. Transuranic Waste Certification.

(1) Transuranic waste shall be certified, pursuant to the Waste Isolation Pilot Plant-Waste Acceptance Criteria, placed in interim storage, and sent to the Waste Isolation Pilot Plant when it becomes operational.

(2) Uncertified transuranic waste shall not be sent to the Waste Isolation Pilot Plant except by special permission granted in response to a formal, documented request to the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee and the Waste Isolation Pilot Plant Waste Operations.

(3) All transuranic waste certification sites shall prepare a certification plan which describes how the waste meets each waste acceptance criterion described in the WIPP-DOE-069 (see Attachment 1, page 3, paragraph 18).

(4) Each certification plan shall define controls and other measures to ensure that each element of the certification plan is performed adequately as described. Requirements for these quality assurance activities are described in the WIPP-DOE-120 (see Attachment 1, page 2, paragraph 19).

(5) Certification plans, including associated quality assurance plans, shall be submitted for review, comment, and approval by the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee.

(6) The Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee shall submit certification and associated quality assurance plans to the state of New Mexico's Environmental Evaluation Group for review and comment prior to granting formal approval of such plans.

(7) The Environmental Evaluation Groups's comments on certification and associated quality assurance plans shall be resolved between the affected site and the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee prior to granting formal approval of the plans.

(8) Approved certification and associated quality assurance plans shall be implemented by the generating sites using specific, written operational procedures.

(9) Certification activities conducted under approved plans and procedures shall be audited periodically, in accordance with a written audit program plan on a continuing basis by the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee. An Environmental Evaluation Group representative may accompany the Waste Isolation

Pilot Plant-Waste Acceptance Criteria Certification Committee audit team as an observer during site audits. The Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee may grant certifying authority to the site following successful completion of an audit.

(10) The Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee shall issue a formal audit report to the responsible field organization following the completion of an audit. The audit report shall describe the activities of the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee audit team and include a record of any findings, observations, and recommendations. Corrective actions taken as a result of a finding shall be verified on subsequent audits. The Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee shall institute a tracking system to ensure timely resolution of findings, observations, recommendations, and the resultant corrective actions.

(11) Failure to resolve and close out previous audit findings and recommendations or sending noncomplying waste to the Waste Isolation Pilot Plant when judged by the Waste Acceptance Criteria Certification Committee to be a serious violation, shall result in suspension of certifying authority, pending satisfactory resolution.

d. Transuranic Waste Packaging.

(1) Newly generated transuranic waste shall be placed in noncombustible packaging that meets DOT requirements.

(2) All Type A transuranic waste containers shall be equipped with a method to prevent pressure buildup. Acceptable pressure-relief devices include permeable gaskets, vent clips, and filtered vents.

(3) The waste packages shall be marked, labeled, and sealed in accordance with the Waste Isolation Pilot Plant-Waste Acceptance Criteria, EPA, and DOT requirements, as defined in the WIPP-DOE-069, 40 CFR 262, Subpart C, and 49 CFR 172, Subparts D, E, and 49 CFR 173, Subpart I, where applicable, prior to shipping.

e. Temporary Storage at Generating Sites. The following activities shall be performed to assure the safe storage of transuranic wastes consistent with the requirements of applicable Resource Conservation and Recovery Act regulations:

(1) Transuranic waste shall be segregated or otherwise clearly identified to avoid the commingling of transuranic waste streams with high-level waste or low-level waste.

(2) Certified transuranic waste shall not be commingled with noncertified transuranic waste and shall be stored in a manner unlikely to alter its certification status.

(3) Transuranic waste in storage areas shall be protected from unauthorized access.

(4) Transuranic wastes in storage shall be monitored periodically to ensure that the wastes are not releasing their radioactive and/or hazardous constituents.

(5) Transuranic waste storage facilities shall be designed, constructed, maintained, and operated to minimize the possibility of fire, explosion, or accidental release of radioactive and/or hazardous components of the waste to the environment.

(6) Facilities which store transuranic waste shall have a contingency plan designed to minimize the adverse impacts of fire, explosion, or accidental release of hazardous components of the waste to the environment.

(7) Transuranic waste shall be stored in such a way so as to maintain radiation exposures as low as reasonably achievable.

f. Transportation/Shipping to the Waste Isolation Pilot Plant.

(1) Transuranic waste shipments shall comply with the provisions of DOE and DOT regulations, pursuant to DOE 1540.1.

(2) Transuranic waste shipments by truck shall be by a DOE-controlled carrier system. All transuranic waste shall be transported in certified Type B packaging.

(3) Shipping papers shall provide the information required by DOT (49 CFR 172, Subpart C), the Waste Isolation Pilot Plant Data Package (WIPP-DOE-157), and, as necessary, the manifest required by EPA (40 CFR 261, and 262).

(4) Distribution of the shipping papers shall be as follows:

(a) Shipper - one copy (or more);

(b) Carrier - one copy; and

(c) Waste Isolation Pilot Plant - two copies.

A copy of the papers will be returned by the Waste Isolation Pilot Plant to the shipper after emplacement of the waste at the Waste Isolation Pilot Plant.

(5) Appropriate EPA and State authorizations/permits shall be obtained for the transport system, as applicable.

(6) Placarding of shipments shall be carried out, as required by the regulations of DOT (contained in 49 CFR 172, Subpart F).

(7) All shipments of transuranic waste shall be in or on "exclusive use" vehicles, as defined in 49 CFR 173. Shipments shall be made as expeditiously as possible and shall be tracked from origin to destination using a real-time tracking communications system. Deviations from "preferred routes," delays and other irregularities detected by the system shall be investigated by the responsible traffic manager and a report sent to the Waste Isolation Pilot Plant within 90 days.

(8) The Albuquerque Operations Office shall develop a transuranic waste transportation management and operations plan which addresses, but is not limited to, the following considerations:

(a) Communication between transport vehicle and traffic management;

(b) Shipment tracking in transit;

(c) Security;

(d) Emergency notification/response;

(e) Shipment routing;

(f) Shipment notification as appropriate;

(g) Driver training and qualifications;

(h) Vehicle maintenance and inspection;

(i) State surveillance and inspection; and

(j) Inspection and recertification of transport packagings.

g. Interim Storage.

(1) Interim storage sites have been designated for storage of:

(a) Waste certified by off site generators;

(b) Waste certified by on site generators;

(c) Waste certified by interim storage personnel; and

(d) Uncertified waste received from on site and/or off site generators that is awaiting processing and certification.

(2) New interim storage facilities shall be sited, designed, constructed, and operated consistent with the requirements of applicable Resource Conservation and Recovery Act regulations and in a manner which satisfactorily addresses the following considerations at a minimum:

(a) Proximity to ground water and areas of seismic activity or flood plains shall be identified, and potential impacts shall be evaluated.

(b) The facility shall be designed and operated to minimize the run on and run off of precipitation. The run off control system shall provide for collecting and sampling run off, which may come in contact with the waste packages, prior to releasing the water for discharge.

(c) An environmental monitoring system shall be provided to detect any release and migration of major radioactive and hazardous components. Background levels of primary radioactive and hazardous waste components shall be determined.

(d) The storage facility design shall minimize the possibility for the unauthorized entry of persons.

(e) Incompatible wastes types shall be placed in separate packages and stored in segregated areas to prevent accidental ignition or chemical reaction.

(f) Waste storage facilities shall be designed and operated to minimize the exposure of personnel to radiation and chemicals.

(g) The storage facility operator shall inspect or verify routinely the condition of waste packages at the storage site for deterioration that may threaten human health or cause release of hazardous or radioactive components to the environment.

(h) The storage facility operator shall prepare plans that identify and describe how the site will be closed at the end of its active life. These plans shall address sampling, testing, and monitoring for major radioactive and hazardous waste components in soil and groundwater.

(i) Sites that use underground storage tanks for the storage of transuranic waste shall comply with the requirements of the Resource Conservation and Recovery Act, as applicable.

(j) Permits shall be acquired, as necessary, from appropriate regulatory entities for all the interim storage facility activities listed above.

(3) Existing interim storage sites shall be reviewed for consistency with the items in paragraph 3g(2). Any necessary corrective actions shall be performed based on a compliance schedule approved by appropriate regulatory authorities.

(4) Certified waste shall be stored in a manner unlikely to alter the certification of the waste package.

(5) Operators of interim storage facilities shall receive data package information (see Attachment 1, page 2, paragraphs 18 and 20) for each waste package from the generator. The operator shall store the waste generator's data and shall use the data to prepare a new Data Package at the time of shipment to the Waste Isolation Pilot Plant.

(6) Certified waste from off site generators does not require additional waste analysis or interim inspection, either upon receipt at the storage site or at the time of shipment to the Waste Isolation Pilot Plant. The generator of the certified waste is responsible for describing the waste form and waste package content.

(7) Waste that has been certified by a generator and shipped to an interim storage site shall be reshipped to the Waste Isolation Pilot Plant by the interim storage site in the following manner:

(a) The generator/certifier shall be identified as the generator/certifier and shipping originator.

(b) The interim storage site shall be identified as the reshipper.

(c) The shipping originator is responsible for certifiability of the waste form, waste package content, waste container procurement documentation, related Data Package information, and proper marking, labeling and placarding of the shipment. The shipping originator is responsible for any problems or discrepancies relating to the above-mentioned items that may occur during shipment to or emplacement at the Waste Isolation Pilot Plant.

(d) The reshipper is responsible for complete data package assembly, transmittal, proper marking, labeling, placarding, verifying the adequacy of the exterior condition of the container (e.g., no significant deterioration, bulging) and for proper shipment loading. The reshipper shall perform radiation dose rate and contamination surveys on each package. The reshipper is responsible for any problems or discrepancies involving the items mentioned above.

(8) The interim storage site is the shipping originator for stored waste certified at that site. Agreements may need to be developed between offsite waste generators and interim storage site operators/certifiers to define clearly their respective responsibilities.

h. Waste Isolation Pilot Plant.

(1) The Waste Isolation Pilot Plant is a defense activity of the DOE for the express purpose of providing a research and development facility to demonstrate the safe disposal of radioactive wastes resulting from defense activities.

(2) After the successful demonstration of the safe disposal of defense transuranic wastes, the Waste Isolation Pilot Plant will be the planned destination for all certified contact-handled and remote-handled transuranic waste, including mixed transuranic waste.

(3) Prior to shipment of waste, the Waste Isolation Pilot Plant shall validate the data package for that waste shipment.

(4) Upon receipt of waste, Waste Isolation Pilot Plant activities shall include, but not be limited to, the following:

(a) Verification of the package or assembly identification numbers against the Data Package;

(b) Measurement of the external radiation dose rate of the package and shipping container;

(c) Verification that contamination levels on the package and shipping container surfaces are within acceptable limits; and

(d) Review and proper processing of all shipping papers and manifests.

(5) During a period of up to 5 years from the first emplacement of waste in the Waste Isolation Pilot Plant, the waste shall be stored retrievably. This phase is called the Operations Demonstration Period.

(6) The decision for or against permanent disposal will be made at the end of the Operations Demonstration Period. If the decision is against using the Waste Isolation Pilot Plant as the repository, the stored waste shall be retrieved, repackaged, if necessary, and handled as directed by DOE. At that time, the Waste Isolation Pilot Plant shall be decontaminated, decommissioned, and closed, per agreement with the State of New Mexico.

(7) If the Waste Isolation Pilot Plant is designated a repository, the underground portion of the Waste Isolation Pilot Plant shall be sealed upon completion of all planned transuranic waste disposal activities. Surface facilities shall be decontaminated and decommissioned, and the Waste Isolation Pilot Plant will be closed, per agreement with the state of New Mexico.

(8) Following closure, the salt tailings will be disposed of in an environmentally acceptable manner and the site shall be returned to its natural state. Waste burial record shall be stored securely, and permanent markers shall be installed to minimize the possibility of future human intrusion.

i. Buried Transuranic-Contaminated Waste.

(1) Alternatives for the long term management of buried transuranic-contaminated waste at inactive DOE waste sites are addressed in Attachment 1, page 3, paragraph 22. The inactive waste sites are located at Idaho National Engineering Laboratory, Los Alamos National Laboratory, Oak Ridge National Laboratory, Savannah River Plant, and the Hanford Site. The program will lead to the closure of each waste site, in compliance with the National Environmental Policy Act requirements, the Comprehensive Environmental Response, Compensation, and Liability Act, the Superfund Amendments and Reauthorization Act, and other applicable DOE, EPA, and State requirements.

(2) Each waste site shall be characterized to include information on types and quantities of radioactive and hazardous chemicals. This information shall be verified by appropriate sampling/analysis/monitoring techniques. The characterization and verification activities will also include determination of waste migration from the burial sites and potential environmental and health impacts.

(3) Each DOE site will develop a closure strategy for the waste site(s), utilizing the waste characterization data. Basic site-closure strategies which could be a combination of (a), (b), and (c) depending on site-specific and regulatory requirements, are as follows:

(a) Leave waste in place with enhanced monitoring.

(b) Leave waste in place, use enhanced confinement or in-situ immobilization techniques, and provide enhanced monitoring.

(c) Retrieve, process, and dispose of the transuranic waste at the Waste Isolation Pilot Plant.

(4) Each DOE site will develop a site closure plan, which will include, as a minimum, the following:

(a) National Environmental Policy Act requirements;

(b) Applicable Federal, State and local regulations (e.g., DOE, EPA, State);

(c) Permits required;

(d) Selected closure strategy and justification;

(e) A waste retrieval strategy:

1 Methodology for segregating transuranic and low-level waste,

2 Identification of mixed waste components,

3 Certification of transuranic waste for disposal at the Waste Isolation Pilot Plant,

4 Management of low-level waste and mixed waste, and

5 Plans for maintaining exposures as low as reasonably achievable;

(f) Budget requirements by fiscal year;

(g) Schedule for closure strategy completion; and

(h) Post-closure monitoring and controls.

j. Quality Assurance. Consistent with DOE Order 5700.6B, transuranic waste operations shall be conducted in accordance with applicable requirements of the American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1 (see Attachment 1, page 5, paragraph 48) and other appropriate national consensus standards.

CHAPTER III

MANAGEMENT OF LOW-LEVEL WASTE

1. PURPOSE. To establish policies, requirements and guidelines, for managing the Department's solid low-level waste.

2. POLICY.

   a. DOE-low-level waste operations shall be managed to protect the health and safety of the public, preserve the environment of the waste management facilities, and ensure that no legacy requiring remedial action remains after operations have been terminated.

   b. DOE-low-level waste shall be managed on a systematic basis using the most appropriate combination of waste generation reduction, segregation, treatment, and disposal practices so that the radioactive components are contained and the overall system cost effectiveness is maximized.

   c. DOE-low-level waste shall be disposed of on the site at which it is generated, if practical, or if on-site disposal capability is not available, at another DOE disposal facility.

   d. DOE-low-level waste that contains non-radioactive hazardous waste components (mixed waste) shall conform to the requirements of this order, applicable EH Orders, and shall also be regulated by the appropriate regional authorities under the Resource Conservation and Recovery Act.

3. REQUIREMENTS.

   a. Performance Objectives. DOE-low-level waste that has not been disposed of prior to issuance of this Order shall be managed on the schedule developed in the Implementation Plan (See page 7, paragraph 10) to accomplish the following:

      (1) Protect public health and safety in accordance with standards specified in applicable EH Orders and other DOE Orders.

      (2) Assure that external exposure to the waste and concentrations of radioactive material which may be released into surface water, ground water, soil, plants and animals results in an effective dose equivalent that does not exceed 25 mrem/yr to any member of the public. Releases to the atmosphere shall meet the requirements of 40 CFR 61. Reasonable effort should be made to maintain releases of radioactivity in effluents to the general environment as low as is reasonably achievable.

(3) Assure that the committed effective dose equivalents received by individuals who inadvertently may intrude into the facility after the loss of active institutional control (100 years) will not exceed 100 mrem/yr for continuous exposure or 500 mrem for a single acute exposure.

(4) Protect ground water resources, consistent with Federal, State and local requirements.

b. Performance Assessment.

(1) Field organizations with disposal sites shall prepare and maintain a site specific radiological performance assessment for the disposal of waste for the purpose of demonstrating compliance with the performance objectives stated in paragraph 3a.

(2) Each field organization shall, for each DOE reservation within its cognizance, prepare and maintain an overall waste management systems performance assessment supporting the combination of waste management practices used in generation reduction, segregation, treatment, packaging, storage, and disposal. Background and guidance on waste management systems performance assessment is provided in Attachment 1, page 3, paragraph 21.

(3) Where practical, monitoring measurements to evaluate actual and prospective performance should be made at locations as required, within and outside each facility and disposal site. Monitoring should also be used to validate or modify the models used in performance assessments.

c. Waste Generation.

(1) Technical and administrative controls shall be directed to reducing the gross volume of waste generated and/or the amount of radioactivity requiring disposal. Waste reduction efforts shall include consideration of process modification, process optimization, materials substitution and decontamination.

(2) Waste Generation Reduction. All DOE-low-level waste generators shall establish auditable programs (goals, incentives, procedures, and reports) to assure that the amount of low-level waste generated and/or shipped for disposal is minimized.

(3) Waste Segregation. Each DOE-low-level waste generator shall separate uncontaminated waste from low-level waste to facilitate cost effective treatment and disposal.

(4) Waste Minimization. Each DOE-low-level waste generator preparing a design for a new process or process change shall incorporate principles into the design that will minimize the generation of low-level waste.

d. Waste Characterization.

(1) Low-level waste shall be characterized with sufficient accuracy to permit proper segregation, treatment, storage, and disposal. This characterization shall ensure that, upon generation and after processing, the actual physical and chemical characteristics and major radionuclide content are recorded and known during all stages of the waste management process.

(2) Waste characterization data shall be recorded on a waste manifest, as required by paragraph 3m, and shall include:

(a) The physical and chemical characteristics of the waste.

(b) Volume of the waste (total of waste and any solidification or absorbent media).

(c) Weight of the waste (total of waste and any solidification or absorbent media).

(d) Major radionuclides and their concentrations.

(e) Packaging date, package weight, and external volume.

(3) The concentration of a radionuclide may be determined by direct methods or by indirect methods such as use of scaling factors which relate the inferred concentration of one radionuclide to another that is measured, or radionuclide material accountability, if there is reasonable assurance that the indirect methods can be correlated with actual measurements.

e. Waste Acceptance Criteria.

(1) Waste shipped from one field organization to another for treatment, storage or disposal shall be done in accordance with the requirements established by the operations office having responsibility for operations of the receiving facility.

(2) Waste acceptance criteria shall be established for each low-level waste treatment, storage, and disposal facility, and submitted to the cognizant field organization.

(3) Generators of waste shall implement a low-level waste certification program to provide assurance that the waste acceptance criteria for

any low-level waste treatment, storage, or disposal facility used by the generator are met. Generators and facilities receiving the waste are jointly responsible for assuring compliance with waste acceptance criteria. Generators are financially responsible for actions required due to nonconformance.

(4) Generator low-level waste certification programs shall be subject to a periodic audit by operators of facilities to which the waste is sent by the generator.

(5) The waste acceptance criteria for storage, treatment, or disposal facilities shall address the following issues:

(a) Allowable quantities/concentrations of specific radioisotopes to be handled, processed, stored or disposed of;

(b) Criticality safety requirements (waste forms and geometries);

(c) Restrictions regarding low-level waste classified for security reasons;

(d) External radiation and internal heat generation;

(e) Restrictions on the generation of harmful gases, vapors, or liquids in waste;

(f) Chemical and structural stability of waste packages, radiation effects, microbial activity, chemical reactions, and moisture;

(g) Restrictions for chelating and complexing agents having the potential for mobilizing radionuclides; and

(h) Quantity of free liquids.

f. Waste Treatment.

(1) Waste shall be treated by appropriate methods so that the disposal site can meet the performance objectives stated in paragraph 3a.

(2) Waste treatment techniques such as incineration, shredding, and compaction to reduce volume and provide more stable waste forms shall be implemented as necessary to meet performance requirements. Use of waste treatment techniques to increase the life of the disposal facility and improve long-term facility performance, by improved site stability and reduction of infiltrating water, is required to the extent it is cost effective.

(3) The development of large scale waste treatment facilities shall be supported by appropriate the National Environmental Policy Act documentation in addition to the following:

(a) A document shall be prepared that analyzes waste streams needing treatment, treatment options considered and a rationale for selection of proposed treatment processes;

(b) A construction design report including projected waste throughputs and treatment methods, construction and operating cost estimates; and

(c) A Safety Analysis Report.

(4) Operation of waste treatment facilities shall be supported by adequate documentation including the following:

(a) Operation and maintenance procedures;

(b) Personnel training and qualification procedures;

(c) Monitoring and emergency response plans; and

(d) Records shall be maintained for each package of low-level waste that enters and leaves the treatment facility.

g. Shipment.

(1) The volume of waste and number of shipments of low-level waste shall be minimized and the shipments will be conducted based on plans developed by field organizations. Off site shipment of low-level waste shall be in compliance with DOE 1540.1.

(2) Generators shall provide an annual forecast in the third quarter of the fiscal year to the field organizations managing the off-site disposal facility to which the waste is to be shipped.

(3) Generators must receive advance approval from the receiving facility and shall certify prior to shipment that waste meets the receiving facility waste acceptance criteria. The certification program shall be auditable and able to withstand independent review.

(4) Each package of waste must comply with the labeling requirements of DOE 1540.1.

h. Long-Term Storage.

(1) Low-level waste shall be stored by appropriate methods, to achieve the performance objectives stated in paragraph 3a.

(2) Records shall be maintained for all low-level waste that enters and leaves the storage facility, (see paragraph 3m).

(3) The development and operation of a waste storage facility shall be supported by the following documentation (two or more of these may be combined for convenience):

(a) An analysis which identifies the need for the storage facility;

(b) A Construction Design Report, including projected waste planned for storage; construction and operating cost estimates;

(c) A Safety Analysis Report and appropriate National Environmental Policy Act documentation; and

(d) Operational procedures and plans.

(4) Storage of waste to allow for nuclides to decay or storage of wastes until they can be disposed of by approved methods are acceptable.

i. Disposal.

(1) Low-level waste shall be disposed of by methods appropriate to achieve the performance objectives stated in paragraph 3a, consistent with the disposal site radiological performance assessment in paragraph 3b.

(2) Engineered modifications (stabilization, packaging, burial depth, barriers) for specific waste types and for specific waste compositions (fission products, induced radioactivity, uranium, thorium, radium) for each disposal site shall be developed through the performance assessment model (see paragraph 3b(1)). In the course of this process, site specific waste classification limits may be developed if operationally useful in determining how specific wastes should be stabilized and packaged for disposal.

(3) An Oversight and Peer Review Panel of DOE, contractor, and other specialists in performance assessments will be selected by DP-12, with participation by EH-1 and operations office representatives. Through consultation and review, this panel shall ensure consistency and technical quality around the DOE complex in the development and application of performance assessment models that include site specific geohydrology and waste composition.

(4) Disposition of waste designated as greater-than-class C, as defined in 10 CFR 61.55, must be handled as special cases. Disposal systems for such waste must be justified by a specific performance assessment through the National Environmental Policy Act process and with the concurrence of DP-12 for all DP-1 disposal facilities and of NE-20 for those disposal facilities under the cognizance of NE-1.

(5) The following are additional disposal requirements intended either to improve stability of the disposal site or to facilitate handling and provide protection of the health and safety of personnel at the disposal site:

(a) Waste must not be packaged for disposal in cardboard or fiberboard boxes, unless such boxes meet DOT requirements and contain stabilized waste with a minimum of void space. For all types of containers, void spaces within the waste and between the waste and its packaging shall be reduced as much as practical.

(b) Liquid wastes, or wastes containing free liquid, must be converted into a form that contains as little freestanding and noncorrosive liquid as is reasonably achievable, but, in no case, shall the liquid exceed 1 percent of the volume of the waste when the waste is in a disposal container, or 0.5 percent of the volume of the waste processed to a stable form.

(c) Waste must not be readily capable of detonation or of explosive decomposition or reaction at normal pressures and temperatures, or of explosive reaction with water.

(d) Waste must not contain, or be capable of generating, quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste. This does not apply to radioactive gaseous waste packaged as identified in paragraph 3i(5)(e).

(e) Waste in a gaseous form must be packaged at a pressure that does not exceed 1.5 atmospheres at 20°C.

(f) Waste must not be pyrophoric. Pyrophoric materials contained in waste shall be treated, prepared, and packaged to be nonflammable.

(6) Waste containing amounts of radionuclides below regulatory concern, as defined by Federal regulations, may be disposed without regard to radioactivity content.

(7) Disposal Site Selection.

(a) Disposal site selection criteria (based on planned waste confinement technology) shall be developed for establishing new low-level waste disposal sites.

(b) Disposal site selection shall be based on an evaluation of the prospective site in conjunction with planned waste confinement technology, and in accordance with the the National Environmental Policy Act process.

(c) The disposal site shall have hydrogeologic characteristics which, in conjunction with the planned waste confinement technology, will protect the groundwater resource.

(d) The potential for natural hazards such as floods, erosion, tornadoes, earthquakes, and volcanoes shall be considered in site selection.

(e) Site selection criteria shall address the impact on current and projected populations, land use resource development plans and nearby public facilities, accessibility to transportation routes and utilities, and the location of waste generation.

(8) Disposal Facility and Disposal Site Design.

(a) Design criteria shall be established prior to selection of new disposal facilities, new disposal sites, or both. These design criteria shall be based on analyses of physiographic, environmental, and hydrogeological data to assure that the policy and requirements of this Order can be met. The criteria shall be also based on assessments of projected waste volumes, waste characteristics, and facility and disposal site performance.

(b) Disposal units shall be designed consistent with disposal site hydrology, geology, and waste characteristics and in accordance with the National Environmental Policy Act process.

(9) Disposal Facility Operations.

(a) Field organizations shall develop and implement operating procedures for low-level waste disposal facilities that protect the environment, health and safety of the public, and facility personnel; ensure the security of the facility; minimize the need for long-term control; and meet the requirements of the closure/post-closure plan.

(b) Permanent identification markers for disposal excavations and monitoring wells shall be emplaced.

(c) Operating procedures shall include training for disposal facility operating personnel, emergency response plans, and a system of reporting unusual occurrences according to DOE 5000.3.

(d) Waste placement into disposal units should minimize voids between containers.

(e) Operations are to be conducted so that active waste disposal operations will not have an adverse effect on filled disposal units.

j. Disposal Site Closure/Post Closure.

(1) Field organizations shall develop site-specific comprehensive closure plans for new and existing operating low level waste disposal sites. The plan shall address closure of disposal sites within a 5-year period after each is filled and shall conform to the requirements of the National Environmental Policy Act process. Performance objectives for existing disposal sites shall be developed on a case-by-case basis as part of the National Environmental Policy Act process.

(2) During closure and post closure, residual radioactivity levels for surface soils shall comply with existing DOE decommissioning guidelines.

(3) Corrective measures shall be applied to new disposal sites or individual disposal units if conditions occur or are forecasted that could jeopardize attainment of the performance objectives of this Order.

(4) Inactive disposal facilities, disposal sites, and disposal units shall be managed in conformance with the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and the Superfund Amendments and Reauthorization Act, or, if mixed waste is involved, may be included in permit applications for operation of contiguous disposal facilities.

(5) Closure plans for new and existing operating low-level waste disposal facilities shall be reviewed and approved by the appropriate field organization.

(6) Termination of monitoring and maintenance activity at closed facilities or sites shall be based on an analysis of site performance at the end of the institutional control period.

k. Environmental Monitoring.

(1) Each operational or non-operational low-level waste treatment, storage, and disposal facility shall be monitored by an environmental monitoring program that conforms with DOE 5484.1 and, at a minimum, meet the requirements of paragraph 3K(2) through 3K(4).

(2) The environmental monitoring program shall be designed to measure: (a) operational effluent releases; (b) migration of radionuclides; (c) disposal unit subsidence; and (d) changes in disposal facility and disposal site parameters which may affect long-term site performance.

(3) Based on the characteristics of the facility being monitored, the environmental monitoring program may include, but not necessarily be limited to, monitoring surface soil, air, surface water, and, in the subsurface, soil and water, both in the saturated and the unsaturated zones.

(4) The monitoring program shall be capable of detecting changing trends in performance sufficiently in advance to allow application of any necessary corrective action prior to exceeding performance objectives. The monitoring program shall be able to ascertain whether or not effluents from each treatment, storage, or disposal facility or disposal site meet the requirements of applicable EH Orders.

l. Quality Assurance. Consistent with DOE 5700.6B, the low-level waste operational and disposal practices shall be conducted in accordance with applicable requirements of American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1 (See Attachment 1, page 5, paragraph 48) and other appropriate national consensus standards.

m. Records and Reports.

(1) Each field organization shall develop and maintain a record keeping system that records the following: a historical record of waste generated, treated, stored, shipped, disposed of, or both, at the facilities under its cognizance. The data maintained shall include all data necessary to show that the waste was properly classified, treated, stored, shipped, and/or disposed of. The data maintained in the system shall be based on the data recorded on waste manifests.

(2) Waste Manifest. Records shall be kept and accompany each waste package from generator through final disposal. The manifest shall contain data necessary to document the proper classification, and assist in determining proper treatment, storage, and disposal of the waste. Waste manifests will be kept as permanent records. At a minimum, the following data will be included:

(a) Waste physical and chemical characteristics,

(b) Quantity of each major radionuclide present,

(c) Weight of the waste (total of waste and any solidification or absorbent media),

(d) Volume of the waste (total of waste and any solidification or absorbent media), and

(e) Other data necessary to demonstrate compliance with waste acceptance criteria.

CHAPTER IV

MANAGEMENT OF WASTE CONTAINING AEA 11e(2) BYPRODUCT MATERIAL AND NATURALLY OCCURRING AND ACCELERATOR PRODUCED RADIOACTIVE MATERIAL

1. PURPOSE. To establish policies and guidelines for managing DOE waste containing byproduct material, as defined by section 11e(2) of the Atomic Energy Act of 1954, as amended, and Naturally Occurring and Accelerator Produced Radioactive Material.

2. POLICY. DOE waste containing naturally occurring and accelerator produced radioactive material or byproduct material as defined by section 11e(2) of the Atomic Energy Act, as amended, or similarly contaminated residues derived from DOE remedial actions, shall be stored, stabilized in-place, and/or disposed of consistent with the requirements of the residual radioactive material guidelines contained in 40 CFR 192. Small volumes of DOE waste containing 11e(2) byproduct material or naturally occurring and accelerator produced radioactive material may be managed as low-level waste in accordance with the requirements of Chapter III of this Order. If the waste is classified as mixed waste, management also must be in compliance with the requirements of the Resource Conservation and Recovery Act.

3. REQUIREMENTS.

   a. Waste Management.

      (1) Waste covered under this chapter in quantities too large for acceptance at DOE low-level waste disposal sites shall be managed according to the requirements of 40 CFR 192, and disposed of at specially designated DOE sites or tailing disposal sites established under the Uranium Mill Tailings Radiation Control Act of 1978 (Public Law 95-604). These disposal sites should be identified and developed as needed in support of DOE remedial actions, and will normally be located in the State in which the wastes are generated.

      (2) With the approval of the appropriate field organization, small volumes of 11(e) byproduct material and naturally occurring and accelerator produced radioactive material waste may be disposed of at DOE low-level waste sites in accordance with the requirements of Chapter III of this Order.

      (3) All DOE waste containing:

         (a) Naturally occurring and accelerator produced radioactive material mixed with the Resource Conservation and Recovery Act hazardous chemicals shall be managed as hazardous waste under the Resource Conservation and Recovery Act.

(b) Byproduct 11e(2) (or a combination of 11e(2) byproduct and naturally occurring and accelerator produced radioactive material) mixed with the Resource Conservation and Recovery Act hazardous chemicals, shall be managed consistent with both the Resource Conservation and Recovery Act and 40 CFR Part 192.

b. Quality Assurance. Consistent with DOE 5700.6B, waste management practices shall be conducted in accordance with applicable requirements of American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1 (reference 48) and other appropriate national consensus standards.

CHAPTER V

DECOMMISSIONING OF RADIOACTIVELY CONTAMINATED FACILITIES

1. PURPOSE. To establish policies and guidelines for the management, decontamination, and decommissioning of radioactively contaminated facilities under DOE ownership or control.

2. POLICY. Radioactively contaminated facilities for which DOE is responsible shall be managed in a safe, cost-effective manner to assure that release of, and exposure to, radioactivity and other hazardous materials comply with Federal and State standards. Facilities, equipment, and valuable materials shall be recovered and reused when practical.

3. REQUIREMENTS. DOE organizations shall develop and document their programs to provide for the surveillance, maintenance, and decommissioning of contaminated facilities. The decommissioning programs shall be implemented as follows:

   a. General.

      (1) Each field organization shall prepare and maintain a complete list of contaminated facilities both operational and excess under its jurisdiction. A continuous record of jurisdictional program responsibility for all contaminated facilities shall be maintained by the cognizant field organization for use in assigning decommissioning responsibility.

      (2) Operational records (e.g., facility design drawings and modifications, characterization data on contamination levels, prior decontamination activities, and incident reports required by DOE Orders) for all contaminated facilities shall be maintained by the cognizant field organization for use in preparing decommissioning plans.

      (3) Planning for facility decommissioning shall be initiated during the design phase for new facilities and prior to termination of operations for existing operational facilities. Such plans shall consider the 2-year budget cycle to assure adequate funding availability.

      (4) Program offices shall be responsible for placing the facility in a safe storage condition, providing surveillance and maintenance, and decommissioning the facilities under their jurisdiction when they become excess to programmatic needs, or for finding another programmatic sponsor for them. For multiple user facilities, the program office shall determine decommissioning liability for user program offices based on each program's overall contribution to the contamination or some other mutually acceptable basis. This cost sharing formula may be applied when the facility is placed in safe storage or during surveillance and maintenance, when appropriate.

(5) Responsibility for contaminated facilities may be transferred from one program organization to another by mutual agreement of the programs involved. The program organization to which a facility is transferred shall accept full responsibility for surveillance, maintenance, and decommissioning of the facility according to the requirements of this Order. Agreements to transfer facilities for functional purposes shall be in writing and shall identify explicitly the concurrent transfer of responsibility for surveillance, maintenance, and decommissioning.

(6) The DP and NE decommissioning programs exist for the primary purpose of managing and decommissioning the contaminated facilities currently assigned to them. Other contaminated facilities that have no programmatic sponsor, or that are excess to program needs and have a current sponsor, shall be assigned to the DP and NE programs for management and decommissioning with the approval of the program secretarial officers involved or their designees.

(7) Decommissioning expertise gained by DOE and its contractors is available at most major DOE facilities, and should be utilized by DOE programs. A computerized Decommissioning Technology data base is maintained at the Richland Operations Office. Published reports on nuclear facility decommissioning may be obtained from the Remedial Action Program Information Center at Oak Ridge National Laboratory.

b. Facility Design. Facilities in which radioactive or other hazardous materials are utilized shall be designed to simplify decontamination and decommissioning and/or increase the potential for reuse. Features and procedures that simplify and facilitate decommissioning shall be identified during the planning and design phase based upon a proposed decommissioning method or conversion to other use. Examples of features to be incorporated are identified in DOE 6430.1.

c. Post-Operational Activities.

(1) DOE Program organizations shall identify contaminated facilities under their jurisdiction, document the potential for reuse and recovery of materials and equipment, and develop schedules for decommissioning them. Projects consisting of one or more facilities shall be identified as appropriate, and priorities shall be developed based on:

(a) Maintaining employee and public health and safety,

(b) Protection of the environment,

(c) Compliance with the National Environmental Policy Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act,

the Superfund Amendments and Reauthorization Act, and other contractual or legal requirements,

(d) Cost effective program management (e.g., maintaining manpower pools, selecting economical decommissioning alternatives), and

(e) Future site plans.

(2) Program organizations shall assure that, prior to initiation of decommissioning activities, adequate surveillance and maintenance is performed for their surplus facilities to meet applicable radiation protection (DOE 5480.1B), hazardous chemical and safety standards, to maintain physical safety and security, and to reduce potential public and environmental hazards. All high-level waste and stored hazardous materials should be removed by the operator as part of the last operational activities prior to entering into the decommissioning phase.

d. Decommissioning Project Activities.

(1) Characterization. Baseline data for each project shall be collected to support a thorough physical, chemical, and radiological characterization to fulfill the requirements of the National Environmental Policy Act reviews, the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation, and Liability Act, the Superfund Amendments and Reauthorization Act preliminary assessment/site investigations, and detailed engineering. The baseline data shall include:

(a) Drawings, photographs, and other records reflecting the as-built and as-modified condition of the facility and grounds;

(b) The condition of all structures, existing protective barriers, and systems installed to ensure public, occupational, and environmental safety;

(c) The type, form, quantity, and location of hazardous chemical and radioactive material from past operations at the site; and

(d) Information on factors that could influence the selection of decommissioning alternatives (safe storage, entombment, dismantlement) such as potential future use, long-range site plans required by DOE 4300.1B, facility condition, and potential health, safety, and environmental hazards.

(2) Environmental Review Process. The Comprehensive Environmental Response, Compensation, and Liability Act, the Superfund Amendments and Reauthorization Act and/or the Resource Conservation and Recovery

Act status of each project shall be identified and a remedial investigation/feasibility study performed if required. Based on the results of the remedial investigation/feasibility study and any additional data deemed necessary by the responsible field organization, an appropriate environmental review shall be performed according to the requirements of the National Environmental Policy Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and the Superfund Amendments and Reauthorization Act. Candidate decommissioning alternatives shall be identified, assessed, and evaluated, and a preferred decommissioning alternative selected based on the results of the environmental review.

(3) Engineering. Technical engineering planning for each project shall be conducted during the environmental review process to assure that alternative actions and associated environmental issues are identified and assessed, and to support preparation of environmental documentation. Detailed engineering will be initiated after a preferred alternative is selected. A Decommissioning Project Plan shall be prepared for approval by the appropriate program office in compliance with DOE 4700.1. The Plan shall include the following:

(a) Physical, chemical, and radiological characterizational data or references to such data;

(b) A summary evaluation of decommissioning alternatives for the facility including the preferred alternative;

(c) Plans for meeting requirements from the environmental review process (National Environmental Policy Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and the Superfund Amendments and Reauthorization Act) and all necessary permits;

(d) Radiological criteria to be used (modifications, if any, to guidance presented in applicable EH Orders must be approved by the Headquarters program organization and EH-1);

(e) Projections of occupational exposure;

(f) Estimated quantities of radioactive waste to be generated; and

(g) Detailed administrative, cost, schedule, and management information.

(4) Decommissioning Operations.

(a) The decommissioning project shall be conducted in accordance with guidance from Headquarters program offices and the Decommissioning Project Plan. Significant deviations shall be approved by the responsible field organization in consultation with the appropriate program office.

(b) Approval of MA-22 (Office of Project and Facilities Management) shall be obtained before initiating activities to demolish a DOE-owned facility, per the requirements of DOE 4300.1B.

(c) Status reports on project activities shall be prepared in accordance with the requirements of DOE 1332.1A or 4700.1, as appropriate.

(d) Information on waste generation shall be provided to the Integrated Data Base Program, as required.

(e) Decommissioning operations shall be considered a waste-generator and shall meet generator requirements contained in the previous chapters of this Order.

(5) Post Decommissioning Activities.

(a) After decommissioning operations have been completed, a final radiological and chemical survey report (or an independent verification survey report, at remote sites) and a project final report shall be prepared. The final report shall include a description of the project, the final status of the property, and the lessons learned from the project.

(b) The responsible field organization shall compile a Project Data Package consisting of, as a minimum: the Record of Completion; the final radiological and chemical survey report; the Project Final Report; and for remote sites, an independent verification survey report, Certification Docket, and appropriate public notices. The Project Data Package shall be retained permanently in the field organization archives.

(c) The responsible program organization shall assure that any necessary long-term maintenance and surveillance or other safety controls are provided for the decommissioned property.

(d) The decommissioned property may be released from DOE ownership according to the requirements of DOE 4300.1B, if the responsible program organization, in consultation with the Office of the Assistant Secretary EH-1, certifies that the property meets

applicable release criteria for residual radioactivity and hazardous chemicals, and the property is identified properly by notation in the legal land records of the local government entity.

(e) The decommissioned property may be reused for other program activities that may or may not involve radioactivity or hazardous chemicals. If appropriate release criteria are not met, the property may be reused for other program activities that may or may not involve radioactivity or hazardous chemicals provided that adequate safety controls are maintained.

e. Quality Assurance. Consistent with DOE 5700.6B, waste management practices shall be conducted in accordance with applicable requirements of American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1 (Attachment 1, page 5, paragraph 48) and other appropriate national consensus standards.

CHAPTER VI

WASTE MANAGEMENT PLAN OUTLINE

1. PURPOSE. To provide guidance on the development and maintenance of a waste management plan for each site that generates, treats, stores, or disposes of DOE waste.

2. DISCUSSION. The Order for radioactive waste management emphasizes accountable operational requirements set forth in a prescriptive style. Each site that generates, treats, stores, or disposes of DOE radioactive waste, or decommissions contaminated facilities, is responsible for complying with these requirements in terms of how operations are conducted and how these activities are documented. The documentation serves as the written word that the actual operations are being conducted within the framework of the Order.

   The primary purpose of the Waste Management Plan is to compile and consolidate an annual report on how waste management operations are conducted, what facilities are being used to manage wastes, what forces are acting to change current waste management systems, and what plans are in store for the coming fiscal year. The scope of the plan includes the management of both radioactive and hazardous constituents in the Department's waste, whether these are separated or mixed. The body of the Waste Management Plan should not include descriptions of Environmental Restoration activities, as this information is provided under a separate program. However, several documents prepared with Environmental Restoration funding may be cited in Attachment VI-1 to the Waste Management Plan; this preserves consistency in accounting for documentation. Also, the Waste Management Plan includes the management of the DOE's liquid low-level waste which is not governed specifically by this Order.

   The waste management plan provides a vehicle to report current waste management practices and plans for the coming year. It serves as the core document in the site's waste management operations and should reference supporting documentation as appropriate. The attachment to the Waste Management plan allows sites to account for major documentation as required by the Order.

3. FORMAT FOR WASTE MANAGEMENT PLANS.

   a. Executive Summary. An Executive Summary is mandatory for each Waste Management Plan.

      (1) As a rule of thumb, limit the length of the executive summary to 10 percent or less of the length of the Waste Management Plan. Summarize the past year in waste management including the principal regulatory/environmental issues and the degree to which planned activities were accomplished.

(2) Provide a forecast of the coming year and discuss project startups, facility modifications, regulatory issues, and the waste management budget.

b. General Site Information.

(1) Organization and Administration. Indicate the DOE field organization(s) and contractor(s) responsible for managing waste treatment, storage and disposal operations; discuss approval authorities, and clarify DOE/contractor interfaces. Include relationships between contractor's operations if multiple contractors are involved.

(a) Use charts to enhance text descriptions of organizational structure. Describe lead responsibilities of functional groups including the organization responsible for preparing this plan.

(b) Show the relationships, in a separate section, between documents that guide and support the waste management program at the site. Identify the organization responsible for maintaining up-to-date copies of all reference documents at the field organization level.

(2) Site Description. Include a brief description of site location, demography size, geographic features, climate, geologic and hydrogeologic conditions, and primary mission where waste management operations are conducted.

c. Radioactive and Mixed Waste Management. This section of the plan describes radioactive and mixed waste management operations at the site and includes descriptions of the waste management systems and facilities, the characteristics of wastes managed, and discussion of the problems, recommendations, and the future direction of the site operations. The top-level divisions of this section should be by waste type; i.e., high-level, transuranic, and low-level. These categories should be subdivided further by waste phase, liquid, solid, or gaseous (where appropriate).

(1) System and Facility Descriptions.

(a) Overview. For each of the categories of waste provide an overview of the systems that treat, store, and dispose of these wastes. Use flowcharts to indicate waste sources, intermediate processing steps, and ultimate disposition of waste streams. Identify which waste streams are classified as mixed waste.

(b) Facility Descriptions. Identify the facilities that comprise the waste management systems according to waste type and waste phase and describe the facilities in the following order: Treatment Facilities; Storage Facilities; and Disposal Facilities. Detailed descriptions of facility operations are not required, but enough explanation should be given to support the discussion of planned

activities. Examples of appropriate information include location maps, radiological and chemical characteristics of waste treated/stored/disposed, facility operating parameters, unique or special equipment used, and status of permitting activities. Include facility layout drawings and flow sheets where appropriate.

(2) Current and Future Plans. This section is used to document the planning efforts at the site and indicate the direction of radioactive and mixed waste management activities. It should be organized to reflect site-specific situations. In general, it should: define problems with, and/or new requirements for, waste management systems; cite specific recommendations and strategy for making improvements; identify actions to achieve compliance with regulations; and discuss plans to modify current waste management systems such as construction of new facilities, plant upgrades, facility decommissioning/closure. Remedial actions should indicate how the findings of system performance assessments were factored into recommendations and plans. They should clearly indicate the driving forces behind their stated plans, such as: to achieve disposal of waste currently in storage; to enhance systems performance; to meet regulatory requirements; and to increase worker protection/safety.

(3) Implementation Requirements. This section is used to document the implementation status by updating the "Implementation Summary Table" from the Implementation Plan. It should present these data in similar tabular format. It should also report progress realized during the past year, remaining actions to complete, remaining costs, and estimated completion dates. In addition it should indicate any variances from original cost and schedule projections in the Implementation Plan, and discuss reasons for variances.

d. Hazardous Waste Management (DP Facilities).

(1) System and Facility Descriptions.

(a) Overview. Provide an overview of the system used to treat, store, and dispose of hazardous wastes at the site. Use flow sheets and location maps where appropriate.

(b) Facility Description. Organize according to treatment facilities, storage facilities, and disposal. Describe the combination of facilities used to manage hazardous wastes at the site and include a discussion of current methods of disposal. Indicate the kinds of hazardous wastes generated and their sources. (Facility drawings and location maps should be included as appropriate.) Indicate status of permitting activities and other actions to achieve compliance with the Resource Conservation and Recovery Act

and the Comprehensive Environmental Response, Compensation, and Liability Act, and the Superfund Amendments and Reauthorization Act.

(2) Current and Future Plans. Indicate recent and planned changes in waste management practice as well as actions to minimize hazardous waste generation; e.g., materials substitution and treatment to render waste nonhazardous. Identify plans for new facility construction, modifications, upgrades, or closures.

e. Schedule and Cost Summary. Show current FY costs and operational schedule for the waste management program. In a separate set of tables, show a 5-year (FY + 4) cost and schedule projection and indicate major milestones to be accomplished during that period.

f. Environmental Monitoring Programs. Describe the status of environmental monitoring that supports waste management operations, with discussion of monitoring installations, media sampled, and constituents analyzed. (This section of the plan should focus on the environmental monitoring systems installed to meet regulatory compliance at the individual waste management facilities. It is not necessary to describe the site-wide monitoring program that reports directly to EH.) Provide descriptions of planned system upgrades and modifications and key these to applicable discussions in paragraphs 3c and d. Include facility maps where appropriate.

g. Related Subjects. Use this section to report on related topics of significant interest to waste management planning efforts at the site. Examples include preparation/review of major National Environmental Policy Act documentation; personnel training; quality assurance; technology demonstrations; and decommissioning projects.

WASTE MANAGEMENT DOCUMENTATION REQUIREMENTS

DISCUSSION. To identify principal documentation requirements as identified, sites are required to list and describe (where appropriate) the waste management documentation indicated below. Each of the following paragraphs refer to specific sections of this Order that require the preparation of waste management documentation. Reporting is limited to documents issued in the previous FY, unless the most recent revision of an existing document was issued earlier. Where possible, this Attachment should retain a standard bibliographical format.

(1) Chapter I - High-Level Waste.

(a) Paragraph 3a. List titles and dates of issue of Safety Analysis Reports. Forecast schedule for preparation and issue date of planned Safety Analysis Reports.

(b) Paragraph 3b(3)(c). List titles and dates of documents supporting the periodic assessment of waste storage tank integrity.

(c) Paragraph 3b(4). Cite documentation of contingency actions of the past year. List schedule for completion of corrective actions.

(2) Chapter II - Transuranic Waste.

(a) Paragraph 3c(3). Cite the Transuranic Waste Certification Plan and date of issue. If not issued, give schedule for preparation.

(b) Paragraph 3g(2)(h). Cite the closure plan for interim storage facilities. If not issued, give schedule for preparation.

(c) Paragraph 3(i). Index major documentation developed under the Buried Transuranic - Contaminated Waste Program. Show schedule for preparation of documents in the current fiscal year.

(3) Chapter III - Low-Level Waste.

(a) Paragraph 3b(1). Cite documentation on radiological performance assessment of disposal facilities. If not issued, provide schedule for preparation in paragraph 3 of the Waste Management Plan.

(b) Paragraph 3e(1). Cite Waste Acceptance Criteria for each low-level waste treatment storage and disposal facility. List anticipated additions to this list for the current fiscal year.

(c) Paragraph 3e(3). Report the status of audits of certification activities by operators of disposal facilities. Report status of follow-up reports.

(d) Paragraph 3g(2). List document(s) forecasting waste to be shipped by generators to off-site disposal facilities.

(e) Paragraph 3i(4)(d). List reports justifying on-site disposal of waste exceeding Class C limits. Such disposal cases anticipated for the next year should be forecast.

(f) Paragraph 3i(8). Cite major National Environmental Policy Act documentation (e.g., Environmental Impact Statement, Environmental Assessment) supporting selection of any new disposal sites. Give schedule of preparation for appropriate documentation for the next year.

(g) Paragraph 3j(1). Cite closure plans for low-level waste disposal sites and dates of issue. Give schedule of preparation for anticipated reports.

(4) Decommissioning of Radioactively Contaminated Facilities.

(a) Paragraphs 3a(1). Cite field organization documentation where the complete listing and the jurisdictional program responsibility for all contaminated facilities is recorded.

(b) Paragraph 3c(1). Cite the post-operational documentation that records the potential for reuse and recovery of materials and equipment and the schedule for decommissioning contaminated facilities.

(c) Paragraph 3d(3). List Decommissioning Project Plans and dates of issue. Show a schedule for preparation of Plans in the current fiscal year.

(d) Paragraph 3d(5). List final radiological and chemical survey reports and project final reports, and show dates of issue. Show anticipated additions to this list for the coming year.

REFERENCES

1. DOE 1332.1A, UNIFORM REPORTING SYSTEM, of 10-15-85, establishes the content and format of plans and reports to be obtained from the Department's contractors and stipulated as a contract requirement.

2. DOE 1430.1A, MANAGEMENT OF THE DEPARTMENT'S SCIENTIFIC AND TECHNICAL INFORMATION, of 9-10-86, which establishes the policy that scientific and technical information developed during work supported by DOE shall be promptly and fully reported to the Technical Information Center (MA-28), located in Oak Ridge, Tennessee, for inclusion in the Department's information data base.

3. DOE 1540.1, MATERIALS TRANSPORTATION AND TRAFFIC MANAGEMENT of 5-3-82, establishes the Department's policies for management of materials transportation activities.

4. DOE 1540.2, HAZARDOUS MATERIAL PACKAGING FOR TRANSPORTATION ADMINISTRATIVE PROCEDURES of 9-30-86, establishes administrative procedures for the certification and use of radioactive and other hazardous materials packaging by the Department of Energy.

5. DOE 2110.1, PRICING OF DEPARTMENTAL MATERIALS AND SERVICES of 2-16-84, which establishes the Department's policy for establishing prices and charges for materials and services provided to outside persons and organizations.

6. DOE 4300.1B, REAL PROPERTY AND SITE DEVELOPMENT PLANNING of 7-1-87, establishes Department policies and procedures for planning the development and utilization of sites and their facilities and for the acquisition, use, inventory, and disposal of real property or interests therein.

7. DOE 4700.1, PROJECT MANAGEMENT SYSTEM, of 3-6-87, establishes the DOE Project Management System (PMS), provides implementing instructions, formats and procedures and sets forth requirements which govern the development, approval and execution of DOE's outlay program acquisition as embodied in the PMS.

8. DOE 5000.3, UNUSUAL OCCURRENCE REPORTING SYSTEM of 11-7-84, establishes the Department's policy and provides instructions for reporting, analyzing, and disseminating information on programmatically significant events.

9. DOE 5400.2, ENVIRONMENTAL COMPLIANCE ISSUE COORDINATION, of 8-13-87, establishes DOE requirements for coordination of significant environmental compliance issues.

10. DOE 5440.1C, NATIONAL ENVIRONMENTAL POLICY ACT of 4-9-85, establishes the Department's policy for implementation of the National Environmental Policy Act of 1969 (Public Law 91-190).

11. DOE 5480.1B, ENVIRONMENTAL SAFETY, AND HEALTH PROGRAM FOR DEPARTMENT OF ENERGY OPERATIONS of 9-23-86, establishes an overall framework of program requirements for safety, environmental, and health protection, including criteria for radiation exposure and radioactive effluent releases for operating facilities and sites.

12. DOE 5480.3, SAFETY REQUIREMENTS FOR THE PACKAGING AND TRANSPORTATION OF HAZARDOUS MATERIALS, HAZARDOUS SUBSTANCES AND HAZARDOUS WASTES, of 7-9-85, establishes requirements for the packaging and transportation of hazardous materials, hazardous substances, and hazardous wastes.

13. DOE 5481.1B, SAFETY ANALYSIS AND REVIEW SYSTEM of 9-23-86, establishes uniform requirements for the preparation and review of safety analyses of DOE operations.

14. DOE 5482.1B, ENVIRONMENT, SAFETY AND HEALTH APPRAISAL PROGRAM of 9-23-86, establishes an environment safety and health appraisal program for DOE.

15. DOE 5484.1, ENVIRONMENTAL, SAFETY, AND HEALTH PROTECTION INFORMATION REPORTING REQUIREMENTS of 2-24-81, establishes requirements and practices for reporting environmental, health, and safety information for DOE operations.

16. DOE 5700.6B, QUALITY ASSURANCE of 9-23-86, sets forth principles and assigns responsibilities for establishing, implementing, and maintaining programs of plans and actions to assure quality achievement in the Department's programs.

17. DOE 6430.1, GENERAL DESIGN CRITERIA of 12-12-83, establishes general design criteria for use in acquisition of the Department's facilities and to establish responsibilities and authorities for the development and maintenance of those criteria.

18. WIPP-DOE-069, rev. 2, of 9-85, "Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant" of 9-81, as updated, specifies basic requirements for disposal of contact-handled and remote-handled transuranic waste at the Waste Isolation Pilot Plant. Copies of this and other DOE Waste Isolation Pilot Plant reports may be obtained from the Albuquerque Operations Office.

19. WIPP-DOE-120, rev. 1, of 1-83, "Quality Assurance" establishes the Quality Assurance requirements to ensure that each site's transuranic waste certification program will perform satisfactorily.

20. WIPP-DOE-157 rev. 1, of 9-85, "Data Package Format for Certified Transuaranic Waste for the Waste Isolation Pilot Plant" specifies the arrangement of data which are required to be reported to the Waste Isolation Pilot Plant for transuranic waste to be received.

21. DOE/LLW-63T of 9-87, "Guidance for Conduct of Waste Management Systems Performance Assessment" provides information on meeting the systems performance requirement of Chapter III 3b(2) of DOE 5820.2A.

22. DOE-JIO-025 of 9-87, "Comprehensive Implementation Plan for the DOE Defense Buried Transuranic-Contaminated Waste Program," describes long term management alternatives for all DOE sites with buried transuranic waste.

23. DOE/RW-0006, rev. 3, "Integrated Data Base for 1987: Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics" of 9-87, with annual updates, summarizes data in the Integrated Data Base program on all domestic spent fuel and radioactive waste. Copies may be obtained from the Office of Nuclear Energy, Germantown, or the Technical Information Center, Oak Ridge.

24. DOE/DP/0020/1 "An Evaluation of Commercial Respository Capacity for the Disposal of Defense High Level Waste," of 6-85, evaluates the use of civilian repository capacity for the disposal of high level waste resulting from Defense activities, and provided to the President as one analytical input for his evaluation as required under the Nuclear Waste Policy Act.

25. Nuclear Waste Policy Act of 1982, as amended, (Public Law 97-425) provides for the development of repositories for the disposal of high-level waste and spent nuclear fuel.

26. Uranium Mill Tailings Radiation Control Act of 1978 (Pubic Law 95-604) establishes national policy for control of uranium mill tailings.

27. Energy Reorganization Act of 1974 (Public Law 93-438), in Section 202, assigns licensing and related regulatory authority to the Nuclear Regulatory Commission for facilities authorized for the express purpose of long-term storage of defense high-level waste.

28. Department of Energy National Security and Military Applications of Nuclear Energy Authorization Act of 1980 (Public Law 96-164), Section 213(a) authorizes the Waste Isolation Pilot Plant.

29. Low-Level Radioactive Waste Policy Amendments Act of 1985 (Public Law 99-240) makes the Federal Government responsible for disposal of commercially generated greater than class C waste as defined in Section 3(b)(1)(D) of the Act.

30. Resource Conservation and Recovery Act of 1976, as amended, (Public Law 94-580) establishes safe and environmentally acceptable management practices for solid wastes.

31. Comprehensive Environment Response, Compensation, and Liability Act of 1980, as amended, (Public Law 96-510) to provide for liability, compensation, cleanup, and emergency response for hazardous substances released into the environment, and the cleanup of inactive hazardous waste disposal sites.

32. The Superfund Amendments and Reauthorization Act of 1986 (Public Law 99-270) provides for a fund (Superfund) which may be utilized by the Environmental Protection Agency, State, and local governments to clean up hazardous waste sites listed on the National Priorities List.

33. National Environmental Policy Act of 1969 (Public Law 91-190) requires the preparation of a statement which considers environmental impacts, alternatives, and resource commitments for any major Federal action that significantly affects the quality of the human environment.

34. Title 5 CFR 1320, Controlling Paperwork Burdens on the Public serves as the implementing regulation for Public Law 96-511, Paperwork Reduction Act of 1980 and directs the identification and clearance of information collections levied on the public, including contractors, State and local government units, and persons who perform services for the Department on an individual basis.

35. Title 10 CFR Part 60, of 2-25-81, Disposal of High-Level Wastes in Geologic Repositories, prescribes rules governing the licensing of the Department of Energy to receive and possess source, special nuclear, and byproduct material at a geologic repository operations area.

36. Title 10 CFR Part 61, of 12-27-82, Licensing Requirements for Land Disposal of Radioactive Waste, establishes technical requirements for the land disposal of commercial low-level waste including site selection, site design, and facility operation and closure.

37. Title 10 CFR Part 71, of 8-5-83, Packaging and Transportation of Radioactive Material, establishes (1) requirements for packaging, preparation for shipment, and transportation of licensed material and (2) procedures and standards for NRC approval of packaging and shipping procedures for fissile material and for a quantity of other licensed material in excess of a Type A quantity.

38. Title 10 CFR Part 962, of 5-1-87, Radioactive Waste; Byproduct Material establishes the policy that all DOE radioactive waste which is hazardous under the Resource Conservation and Recovery Act will be subject to regulation under both the Resource Conservation and Recovery Act and Atomic Energy Act.

39. Title 40 CFR Part 61, of 7-1-87 National Emission Standards for Hazardous Air Pollutants, establishes standards for atmospheric emissions of hazardous air pollutants and radionuclides.

40. Title 40 CFR Part 191, of 9-19-85, Environmental Radioactive Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and transuranic Radioactive Waste, establishes radiation protection standards governing the management and storage of spent nuclear fuel or high-level or transuranic wastes at any disposal facility operated by DOE.

41. Title 40 CFR Part 192, of 1-5-83, Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings, concerns the control of residual radioactive material at designated processing or disposal sites.

42. Title 40 CFR Part 261, of 5-19-80, Identification and Listing of Hazardous Waste identifies those solid wastes that are subject to regulation as hazardous waste.

43. Title 40 CFR 262, of 5-19-80, Standards Applicable to Generators of Hazardous Waste, establishes manufacturing, packaging, labeling, record keeping, and reporting requirements for generators of hazardous waste.

44. Title 40 CFR Part 263, of 5-19-80, Standards Applicable to Transporters of Hazardous Waste, establishes manufacturing, record keeping, spill reporting and cleanup requirements for transporters of hazardous waste.

45. Title 40 CFR Part 264, of 5-19-80, Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities, establishes minimum national standards defining the acceptable management of hazardous waste.

46. Title 40 CFR Part 265, of 5-19-80, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, establishes minimum national standards that define the acceptable management of hazardous waste during the period of interim status and until certification of final closure.

47. Title 49 CFR Parts 100-178, of 10-1-86, Other Regulations Relating to Transportation: Chapter I-Research and Special Programs Administration, Department of Transportation, prescribes the requirements of the DOT governing the transportation of hazardous material and the manufacture and testing of packaging and containers.

48. ANSI/ASME NQA-1 "American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1," sets forth requirements for the establishment and execution of quality assurance programs for the design, construction, operation, and decommissioning of nuclear facilities.

49. Atomic Energy Act of 1954, as amended 42 U.S.C. § § 2011-2292 (1982) which authorizes and directs the Atomic Energy Commission to produce special nuclear material in its own facilities to produce atomic weapons or atomic weapons parts and to research and develop military applications of atomic energy.

50. Nuclear Waste Policy Amendments Act of 1987 (part of the Budget Reconciliation Act for FY 1988 Public Law 100-203), of December 22, 1987, streamlines and focuses the high level waste management program established by the Nuclear Waste Policy Act.

DEFINITIONS

1. Below Regulatory Concern. A definable amount of low-level waste that can be deregulated with minimal risk to the public.

2. Buffer Zone. The smallest region beyond the disposal unit that is required as controlled space for monitoring and for taking mitigative measures, as may be required.

3. Byproduct Material. (Attachment 1, pages 4 and 5, paragraphs 38 and 49.)

   a. Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident or to the process of producing or utilizing special nuclear material. For purposes of determining the applicability of the Resource Conservation and Recovery Act to any radioactive waste, the term "any radioactive material" refers only to the actual radionuclides dispersed or suspended in the waste substance. The nonradioactive hazardous waste component of the waste substance will be subject to regulation under the Resource Conservation and Recovery Act.

   b. The tailings or waste produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content. Ore bodies depleted by uranium solution extraction operations and which remain underground do not constitute "byproduct material."

4. Certified Waste. Waste that has been confirmed to comply with disposal site waste acceptance criteria (e.g., the Waste Isolation Pilot Plant-Waste Acceptance Criteria for transuranic waste) under an approved certification program.

5. Closure.

   a. Operational Closure. Those actions that are taken upon completion of operations to prepare the disposal site or disposal unit for custodial care, (e.g., addition of cover, grading, drainage, erosion control).

   b. Final Site Closure: Those actions that are taken as part of a formal decommissioning or remedial action plan, the purpose of which is to achieve long-term stability of the disposal site and to eliminate to the extent practical the need for active maintenance so that only surveillance, monitoring, and minor custodial care are required.

6. Contact-Handled Transuranic Waste. Packaged transuranic waste whose external surface dose rate does not exceed 200 mrem per hour.

7. Decommissioning. Actions taken to reduce the potential health and safety impacts of DOE contaminated facilities, including activities to stabilize, reduce, or remove radioactive materials or to demolish the facilities.

8. Decontamination. The removal of radioactive contamination from facilities, equipment, or soils by washing, heating, chemical or electrochemical action, mechanical cleaning, or other techniques.

9. Department of Energy Waste. Radioactive waste generated by activities of the Department (or its predecessors), waste for which the Department is responsible under law or contract, or other waste for which the Department is responsible. Such waste may be referred to as DOE waste.

10. Disposal. Emplacement of waste in a manner that assures isolation from the biosphere for the foreseeable future with no intent of retrieval and that requires deliberate action to regain access to the waste.

11. Disposal Facility. The land, structures, and equipment used for the disposal of waste.

12. Disposal Site. That portion of a disposal facility which is used to dispose of waste. For low-level waste, it consists of disposal units and a buffer zone.

13. Disposal Unit. A discrete portion (e.g., a pit, trench, tumulus, vault, or bunker) of the disposal site into which waste is placed for disposal.

14. DOE Reservation. A location consisting of a DOE-controlled land area including DOE-owned facilities (e.g., the Oak Ridge Reservation) in some cases referred to as a Site, such as the Nevada Test Site, the Hanford Site; or as a Laboratory, such as the Idaho National Engineering Laboratory; or as a Plant, such as Rocky Flats Plant; or as a Center, such as the Feed Materials Production Center.

15. Free Liquids. Liquids which readily separate from the solid portion of a waste under ambient temperature and pressure.

16. Engineered Barrier. A man-made structure or device that is intended to improve the performance of a disposal facility.

17. Hazardous Wastes. Those wastes that are designated hazardous by EPA regulations (40 CFR 261).

18. High-Level Waste. The highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid waste derived from the liquid, that contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation.

19. Institutional Control. A period of time, assumed to be about 100 years, during which human institutions continue to control waste management facilities.

20. Low-Level Waste. Waste that contains radioactivity and is not classified as high-level waste, transuranic waste, or spent nuclear fuel or 11e(2) byproduct material as defined by this Order. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level waste, provided the concentration of transuranic is less than 100 nCi/g.

21. Monitoring. The making of observations and measurements to provide data to evaluate the performance of a waste management operation.

22. Mixed Waste. Waste containing both radioactive and hazardous components as defined by the Atomic Energy Act and the Resource Conservation and Recovery Act, respectively.

23. Natural Barrier. The physical, chemical, and hydrological characteristics of the geological environment at the disposal site that, individually and collectively, act to retard or preclude waste migration.

24. Naturally Occurring and Accelerator Produced Radioactive Material. Any radioactive material that can be considered naturally occurring and is not source, special nuclear, or byproduct material or that is produced in a charged particle accelerator.

25. Near Surface Disposal. Disposal in the upper 30 meters of the earth's surface, (e.g. shallow land burial).

26. Performance Assessment. A systematic analysis of the potential risks posed by waste management systems to the public and environment, and a comparison of those risks to established performance objectives.

27. Pyrophoric Material. A material which under normal conditions is liable to cause fires through friction, retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious transportation, handling or disposal hazard.

28. Quality Assurance. All those planned and systematic actions necessary to provide adequate confidence that a facility, structure, system, or component will perform satisfactorily and safely in service. Quality assurance includes quality control, which comprises all those actions necessary to control and verify the features and characteristics of a material, process, product, or service to specified requirements.

29. Radioactive Waste. Solid, liquid, or gaseous material that contains radionuclides regulated under the Atomic Energy Act of 1954, as amended and of negligible economic value considering costs of recovery.

30. Remedial Action. Activities conducted at DOE facilities to reduce potential risks to people and/or harm to the environment from radioactive and/or hazardous substance contamination.

31. Remote-Handled Transuranic Waste. Packaged transuranic waste whose external surface dose rate exceeds 200 mrem per hour. Test specimens of fissionable material irradiated for research and development purposes only and not for the production of power or plutonium may be classified as remote-handled transuranic waste.

32. Repository. A facility for the permanent deep geologic disposal of High Level or Transuranic Waste.

33. Spent Nuclear Fuel. Fuel that has been withdrawn from a nuclear reactor following irradiation, but that has not been reprocessed to remove its constituent elements.

34. Storage. Retrievable retention of waste pending disposal.

35. Storage Facility. Land area, structures, and equipment used for the storage of waste.

36. Storage Unit. A discrete part of the storage facility in which waste is stored.

37. Surplus Facility. Any facility or site (including equipment) that has no identified or planned programmatic use and is contaminated with radioactivity to levels that require controlled access.

38. Transuranium Radionuclide. Any radionuclide having an atomic number greater than 92.

39. Transuranic Waste. Without regard to source or form, waste that is contaminated with alpha-emitting transuranium radionuclides with half-lives greater than 20 years and concentrations greater than 100 nCi/g at the time of assay. Heads of Field Elements can determine that other alpha contaminated wastes, peculiar to a specific site, must be managed as transuranic waste.

40. Treatment. Any method, technique, or process designed to change the physical or chemical character of waste to render it less hazardous, safer to transport, store or dispose of, or reduced in volume.

41. Treatment Facility. The specific area of land, structures, and equipment dedicated to waste treatment and related activities.

42. Waste Container. A receptacle for waste, including any liner or shielding material that is intended to accompany the waste in disposal.

43. Waste Management. The planning, coordination, and direction of those functions related to generation, handling, treatment, storage, transportation, and disposal of waste, as well as associated surveillance and maintenance activities.

44. Waste Package. The waste, waste container, and any absorbent that are intended for disposal as a unit. In the case of surface contaminated, damaged, leaking, or breached waste packages, any overpack shall be considered the waste container, and the original container shall be considered part of the waste.

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1.0 POLICY

Westinghouse Environmental Management Company of Ohio (WEMCO) shall operate the Fernald Environmental Management Project (FEMP) in compliance with Department of Energy (DOE) contractual requirements, Westinghouse Corporate Directives, and state and federal laws/regulations. An integrated system of documents shall implement these identified requirements.

2.0 SCOPE

This procedure defines the system of documents by which the FEMP is managed and details the requirements for development, preparation, and control of these documents.

3.0 DEFINITIONS

3.1 Site Document System - The system of procedural documents governing the performance of administrative, technical, and operational activities at the FEMP. The document hierarchy is described in Figure 1.

3.2 Site Document Program - The document program by which all site applicable documents are issued except department and library documents.

3.3 Drivers - Operational and administrative requirements imposed on WEMCO by agreement, law, contract, DOE Directives, or Corporate Directives.

3.4 Policy and Management Directives - Documents by which the WEMCO President delegates responsibility for implementing requirements imposed by the drivers.

3.5 Site Operating and Interfacing Documents - Detailed instructions or requirements necessary to manage operations requiring participation by two or more departments.

3.6 Department Document - A document providing administrative, technical, or operating instructions to personnel within that department.

3.7 Interim Document - A document issued to satisfy an urgent need as identified by the WEMCO President or Staff Manager. Any site document may be selected for issue as an Interim document with an expiration date of sixty days from issue.

3.0 **DEFINITIONS** (cont.)

3.8 Temporary Revision - A document issued to satisfy an urgent need as identified by the document owner and having an expiration date of 90 days from issue.

3.9 Document Owner - The Staff Manager having primary responsibility for sitewide implementation of a driver or a manager other than a Staff Manager having a need for the document to permit safe and effective operation of activities for which they have primary responsibility. This manager may be the Staff Manager or manager designated by the responsible Staff Manager.

3.10 Procedure Technical Representative (PTR) - An individual that prepares the technical content of a site or department document at the request of the document owner.

3.11 Significant Review Comment (SRC) - A review comment that is considered by the approver to require satisfactory resolution before the document is acceptable for issue. SRC comments are only based on technical inaccuracies, noncompliance, or inconsistencies with established requirements, laws, regulations, and/or procedures. A significant review comment shall be concurred with by the staff manager (approver) if reviewed by an individual other than the approver.

3.12 Documentation Control (DC) - An organization within the Performance Assessment & Communications Department charged with developing, maintaining, and implementing a site document system.

4.0 **RESPONSIBILITIES**

4.1 Document Owner - Responsible for preparing, revising, and approving a document for area of responsibility.

4.2 Staff Manager - Responsible for preparing, approving, and maintaining current department charter and those site documents which implement their chartered responsibilities, and identifying those documents which require mandatory training or which require trained, qualified, and certified employees. Coordinates the required department review for site documents which affect their department by evaluating and consolidating comments to reflect a single department position and concurring with significant review comments.

4.3 WEMCO President - Responsible for authorizing the issue of documents which define and establish WEMCO Policies and Management Directives.

4.0 RESPONSIBILITIES (cont.)

4.4 WEMCO Management - Responsible for reviewing issued site documents for applicability to their operation, assuring affected personnel are informed and trained to applicable documents, and ensuring implementation of issued document(s).

4.5 Documentation Control (DC) - A group within the Performance Assessment & Communications Department having responsibility for establishing and maintaining a controlled centralized document system translating external and internal customer requirements, and facilitating the development or update of the required procedures necessary to accomplish the WEMCO mission.

5.0 GENERAL

5.1 Site Document System Description

5.1.1 The Site Document System consists of all the actions necessary to control and record the following: review of drivers, development of documents, document reviews, document approvals, issue and distribution, and cancellation. The types of documents in this system and their relationships are shown in Figure 1.

5.1.2 A Site Policy and Procedure shall identify how a particular driver will be implemented by describing the necessary actions and identifying the position and/or organization(s) responsible for those actions. Detailed instructions, when necessary, shall be implemented through other site documents or department procedures.

5.1.3 Topical Manuals which have site applicability and were previously issued through the FEMP Library Report System shall be considered a site document. As Site Topical Manuals are revised, new manuals will be issued through the Site Document Program.

5.1.4 Technical reports and papers shall be issued through the FEMP Library Report System per FMPC-608 and FMPC-2070.

5.0 GENERAL (cont.)

5.2 Document Initiation

5.2.1 Drivers enter the Site Document System by formal transmittal of a driver to the WEMCO President, formal transmittal of DOE Directives through the DOE Directives Administrator (Refer to FMPC-605), laws and regulations, or direct communication with a staff manager having responsibility for the implementing actions. Regardless of the route that the driver enters, a staff manager evaluates the driver for applicability to WEMCO operations and initiates actions to implement the driver.

5.2.2 A department charter shall be prepared and kept current by each staff manager as directed by the WEMCO President and shall follow the guidelines provided in this procedure.

5.3 Document Preparation, Approval and Authorization

5.3.1 The document owner or PTR shall identify document needs to DC and prepare a preliminary draft of the document.

5.3.2 The document owner/PTR is responsible for determining the required approvers. DC shall concur with the determination.

5.3.3 Approvers shall review the document and indicate comments on the Document Review Comment Sheet. Comments should be marked as SRC (Significant Review Comment) only when based on technical inaccuracies, noncompliance, or inconsistencies with established requirements, laws, regulations, and/or procedures. Significant review comments require an approval signature by the owner/approver if the SRC is not incorporated as verbatim as on the document review comment sheet. The owner/approver shall sign the document approval record as follows: (Signature)/with comments or no comments. DC shall be responsible to ensure signatures are obtained by the owner/PTR before document issue.

5.3.4 The document owner or the PTR is responsible for resolving and documenting on the document review comment sheet resolution of review comments. At the request of the document owner or PTR, DC will facilitate or resolve comments and document comment resolution.

5.3.5 A procedure development team may be formed for development, review or approval of documents.

5.0 GENERAL (cont.)

5.3.6 Unless a document requires extensive (50% or more) revision, changes shall be identified with an "R" in the left margin of each line revised.

5.3.7 Plans and Information Documents have no established format unless required by a driver.

5.3.8 Document format and content guideline requirements are identified in Figures 2, 3, and 4. Draft word processing for all documents shall be completed using one inch left and right margins.

5.3.9 Required document approval/authorization is identified in Table 1.

5.3.10 A record of issue/revisions shall be a part of each document.

5.4 Temporary Revision (TR) Preparation and Approval (See Figure 5)

5.4.1 A TR shall be written for each affected page or complete section of a document.

5.4.2 Permanently bound documents are excluded from the Temporary Revision System.

5.4.3 The document owner shall determine the need for a TR.

5.4.4 The document owner shall approve and authorize the TR.

5.4.5 Affected staff managers shall be identified by the document owner on the TR and shall review and submit comments within 30 days of TR issue to the document owner.

5.4.6 The affected staff manager(s) are responsible for reviewing the TR per "TR Review Requirements" as listed on TR.

5.4.7 The owner of the document shall evaluate TR comments and identify required TR changes within 60 days, if no change, DC shall incorporate TR in affected document before the expiration date. If there are no comments after 30 days, the owner may identify the TR for incorporation.

5.4.8 A maximum of 6 TRs may exist for a document before a revision is initiated by DC to incorporate the TRs.

5.0 GENERAL (cont.)

5.4.9 The TR shall be a controlled document.

5.4.10 All pages of the TR shall be printed on blue paper.

5.4.11 The document owner may initiate a request to cancel the TR until the date of expiration or date of incorporation.

5.5 Document Issue and Control

5.5.1 Full compliance with the requirements of site documents is required. Site documents are effective on the date they are issued. If a manager cannot comply with the requirements of the document as of the document issue date, the manager must take whatever actions are necessary to bring their organization into compliance as expeditiously as possible.

5.5.2 DC has the authority, without site review, to identify and correct minor editorial changes or corrections which do not impact technical content. These changes shall be completed by a document revision and be transmitted by controlled distribution.

5.5.3 Cancellation of a document shall require the same review and approval authority as an issued document. DC shall cancel existing documents when a document is assigned a new number, superseded by another document, or required strictly for records management purposes.

5.5.4 Each site document shall be reviewed at least annually by the document owner and reissued if applicable as determined by the document owner. DC shall notify the responsible staff manager when an annual review is required.

5.5.5 A Site Document Index shall be issued each month to include site and department documents. The index shall include only current documents.

5.5.6 Documents are authorized for issue by individuals identified in Table 2.

5.5.7 DC shall maintain approval, issue, control, and history records for documents issued through the Site Document Program.

5.0 **GENERAL** (cont.)

5.5.8 Holders of controlled documents are responsible for maintaining the current issue of the documents in their possession.

5.6 Department Documents

5.6.1 Department documents shall be prepared in accordance with a department document program authorized by the department manager and shall contain the elements listed in Table 2.

5.6.2 If requested by a department to administer a Department Document Program, DC may assist in document development and approval.

5.6.3 Department documents shall be formally reviewed at minimum every two years by the department manager and a record of the review maintained.

5.6.4 The first day of each month, a list of new or revised department documents for the month shall be transmitted by each department to DC for inclusion in the Site Document Index.

5.6.5 Department procedures shall not assign responsibilities to other departments.

5.7 Control Of Documents to Subcontractors

5.7.1 A document issued and controlled through the Site Document Program, the FEMP Library, or a Department Document Program, shall be transmitted by Documentation Control to a subcontractor by request of the contract administrator. The transmitted document may be controlled or non-controlled.

6.0 **PROCEDURE**

6.1 Review Applicability of Drivers

STAFF MANAGER

6.1.1 Review the driver for applicability in functional area of responsibility.

NOTE: DOE Directives are reviewed in accordance with FMPC-605, DOE Directives Administration.

6.0 PROCEDURE (cont.)

6.1.2 Take appropriate implementation actions and maintain records of the implementation actions.

6.2 Preparation, Approval, and Issue or Revision of a Site Document

DOCUMENT OWNER

6.2.1 Develop method or process for preparation of new or revision to document. Provide informal reviews for document development.

6.2.2 Identify the need for, or a change to, a site document and provide a draft to DC.

DOCUMENT OWNER/DC

6.2.3 Jointly develop an action plan for development, preparation, review/approval, and issue of a document.

DC

6.2.4 Formal document preparation by a technical writer shall be completed with concurrence of owner/PTR.

6.2.5 Facilitate document review/approval.

6.2.6 Assist the PTR as identified in the action plan in resolving review comments.

6.2.7 Prepare final document.

6.2.8 Obtain authorization.

6.2.9 Issue and control the document.

6.3 Preparation and Issue of a Temporary Revision (TR)

DOCUMENT OWNER

6.3.1 Identify the need for a TR and provide a draft to DC.

DC

6.3.2 Formal document preparation by a technical writer shall be completed with concurrence of owner/PTR.

6.0 **PROCEDURE** (cont.)

DC

6.3.3 Obtain authorization.

6.3.4 Issue and control the document.

7.0 APPLICABLE DOCUMENTS

7.1 Drivers

7.1.2 DOE Order 5700.6B, Quality Assurance

7.2 Reference Documents

7.2.1 FMPC-605, "DOE Directives Administration"

7.2.2 FMPC-608, "Preparation and Release of Technical Information"

7.2.3 FMPC-2070, "Style and Format Guide for Scientific and Technical Reports, Correspondence and other Presentations"

8.0 APPLICABLE FORMS

None

9.0 ATTACHMENTS

None

TABLE 1

DOCUMENT APPROVAL AND AUTHORIZATION

Document Type	Approval	Authorization
Interim Document	Staff Manager responsible for area of subject document	WEMCO President
Policy and Procedure	Affected Staff Managers	WEMCO President
Charter	Affected Staff Managers	WEMCO President
Plan	Affected Staff Managers	WEMCO President
Information Documents	Staff Manager responsible for area of subject document	Staff Manager responsible for area of subject document
Requirements Documents	Affected Staff Managers	WEMCO President
Site Operating Documents	Affected Staff Managers	WEMCO President
Temporary Revision (TR)	Document Owner	Document Owner
Department Documents	As identified by department document program	Department Mgr. or as identified by department program
Scientific and technical reports, correspondence and other presentations through the FEMP Library	Per FMPC-608 FMPC-2070	Per FMPC-608 FMPC-2070

TABLE 2

DEPARTMENT DOCUMENT PROGRAM ELEMENTS

1. Program description
2. Initiation of a new document or revision to an existing document
3. Identification of format for each type of document
4. Processing and review/approval for new or changes to documents
5. Identification of documents
6. Temporary Changes
7. Required approvals
8. Cancellation of Documents
9. Issuing authority
10. Document control
11. Records maintenance

WEMCO DOCUMENT HIERARCHY

DRIVERS

- DOE ORDERS
- STATE & FEDERAL LAWS
- W CORPORATE DIRECTIVES
- CONTRACTUAL AGREEMENTS

POLICY & MANAGEMENT DIRECTIVES

- DEPARTMENT & COMMITTEE CHARTERS
- POLICY & PROCEDURES

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.

SITE OPERATING & INTERFACING DOCUMENTS

- PLANS
- INFORMATION DOCUMENTS
- REQUIREMENTS DOCUMENTS
- SITE OPERATING DOCUMENTS

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

INFORMATION DOCUMENT - INFORMATION COMPLIED 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 DOCUMENTS

- DEPARTMENT PROCEDURES
- PLANS
- MANUALS

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.

SITE DOCUMENT PROGRAM HIERARCHY
Figure 1

ORGANIZATION CHARTER FORMAT AND CONTENT GUIDELINES

1.0 PURPOSE

Identify the overall function of the organization.

2.0 ORGANIZATION

List subgroups and functions within the organization to describe purpose and goals. Describe interrelationships with other organizations.

3.0 RESPONSIBILITIES

List specific responsibilities of organization. If responsibilities are shared with other organizations, ensure shared organizations agree with established responsibilities.

4.0 APPLICABLE DOCUMENTS

Include in this section the specific documents that are applicable to the organization. If no documents exist, state "NONE."

4.1 Drivers - Administrative requirements creating need for the charter.

4.2 Reference Documents - Documents required to complete actions or portions of actions identified in the charter. Reference only documents issued through the Site Document Program. Department and Library Documents are not acceptable.

CHARTER FORMAT AND CONTENT GUIDELINES
Figure 2 (Sheet 1 of 2)

MEMBERSHIP CHARTER FORMAT AND CONTENT GUIDELINES

1.0 PURPOSE

Develop a statement of the purpose for the committee, council, or board.

2.0 MEMBERSHIP

List by title those individuals who serve as members and describe briefly how and whom members are chosen.

3.0 RESPONSIBILITIES

Include the responsibilities of the committee, council, or board, and, if appropriate, the unique responsibilities of the members. State the authority of the committee, council or board. Do not include responsibilities that are standard for any organization, such as the chairperson "chairs", the committee or the members participate in the meetings.

4.0 APPLICABLE DOCUMENTS

Include in this section the specific documents that are applicable to the particular committee, council, or board. If no documents exist, state "NONE."

4.1 Drivers - Administrative requirements creating the need for the charter.

4.2 Reference Documents - Documents required to complete actions or portions of actions identified in the charter. Reference only documents issued through the Site Document Program. Department and Library Documents are not acceptable.

CHARTER FORMAT AND CONTENT GUIDELINES
Figure 2 (Sheet 2 of 2)

POLICY AND PROCEDURE FORMAT AND CONTENT GUIDELINES

1.0 POLICY

Provide a precise statement of the action(s) necessary to meet DOE Orders, Westinghouse Corporate Management Directives, or other identified requirements.

2.0 SCOPE

Describe briefly the purpose of the document and the functions, tasks, or situations that the procedure would be applicable.

3.0 DEFINITIONS

Define those unique terms used in the document that are important to the understanding of the document. Exclude from this section acronyms and abbreviations if the intent of inclusion is only identification and not definition.

4.0 RESPONSIBILITIES

Identify, by title, the individual or group responsible for the required action. This section shall provide an overview of the individual/organization actions and activities which, in a procedure, are presented in greater detail in Section 6.0.

5.0 GENERAL

Include explanatory information that is not specific to the procedure section but is necessary for the clarity and understanding of the document. If there are no general items, indicate by "None." Include figures and tables and locate as placed in this procedure.

6.0 PROCEDURE

6.1 Subsection Title Describing Following Series of Actions

WEMCO EMPLOYEE (Title of WEMCO employee or group responsible for completing the accompanying action steps)

POLICY AND PROCEDURE FORMAT AND CONTENT GUIDELINES
Figure 3 (Sheet 1 of 2)

POLICY AND PROCEDURE FORMAT AND CONTENT GUIDELINES (cont.)

6.0 PROCEDURE (cont.)

6.1.1 Indicate employee or group action in progressive order.

NOTE: Notes place emphasis on the continuity and logical sequence of actions. The use of notes within Section 6.0 shall be restricted to information necessary for user understanding of a particular procedural step. Notes shall not contain action steps.

7.0 APPLICABLE DOCUMENTS

7.1 Drivers - Administrative requirements creating need for the document.

7.2 Reference Documents - Documents required to complete actions or portions of actions identified in the document. Reference only documents issued through the Site Document Program. Department and Library Documents are not acceptable.

8.0 APPLICABLE FORMS

List forms and form numbers used in the Policy and Procedure.

9.0 ATTACHMENTS

Attachments should only supplement information contained in the procedure. The attachment shall not be used to direct procedure activities. Information in the attachment shall be within the borders of the formatted page and be identified at the bottom.

POLICY AND PROCEDURE FORMAT AND CONTENT GUIDELINES
Figure 3 (Sheet 2 of 2)

SSOP FORMAT AND CONTENT GUIDELINES

1.0 PURPOSE

This section shall give a clear, concise statement explaining the intent of the procedure.

2.0 APPLICABILITY

This section shall summarize the reason and the specific case or circumstance for which the procedure applies and each organization to whom the procedure applies.

3.0 RESPONSIBILITIES

This section shall specify the responsibility and authority of the persons and/or organizations involved in the activity for which the procedure is written.

4.0 DEFINITIONS

This section shall include those terms and statements contained in the body of the document which require definition for uniform understanding.

5.0 GENERAL

Include explanatory information that is not specific to the procedure section but is necessary for the clarity and understanding of the document. If there are no general items, indicate by "NONE." Include figures and tables and locate as placed in this procedure.

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS (IF APPLICABLE)

This section shall contain statements and requirements regarding the environment, safety, and health of the activity. If there are no Industrial Health and Safety Requirements, indicate by "None".

SITE STANDARD OPERATING PROCEDURE (SSOP)
FORMAT AND CONTENT GUIDELINES
Figure 4 (Sheet 1 of 3)

SSOP FORMAT AND CONTENT GUIDELINES (cont.)

7.0 PROCEDURE

This section shall contain in detail all steps required to accomplish the activity.

7.1 Figures, tables, and guides shall be included at the end of the text and numbered consecutively.

NOTE: Forms shall be referenced in the text.

7.2 Note, Caution, Warning

7.2.1 A NOTE shall be incorporated in the text of a procedure to clearly define a condition or step of a procedure or present information that may be helpful in completing a task.

Example:

NOTE: A level below 500 gal. will cause pump shutdown.

7.2.2 A CAUTION shall be included in a procedure text when a condition will cause equipment/material damage or personnel injury.

Example:

CAUTION: **VALVE NO. 241 SHALL REMAIN OPEN. VALVE CLOSURE WILL CAUSE CUTTING HEAD DAMAGE AND PERSONAL INJURY.**

SITE STANDARD OPERATING PROCEDURE (SSOP)
FORMAT AND CONTENT GUIDELINES
Figure 4 (Sheet 2 of 3)

SSOP FORMAT AND CONTENT GUIDELINES (cont.)

7.2.3 A WARNING shall be used only for conditions that will cause equipment/material equipment failure and/or result in serious injury or death.

Example:

WARNING: THE IDENTIFIED HOLDING FIXTURE SHALL BE USED WHEN REMOVING THE DERBY FROM THE BREAKOUT AREA. USING A FIXTURE OTHER THAN IDENTIFIED, WILL RESULT IN DERBY BREAKAGE/CRANE FAILURE AND MAY RESULT IN SERIOUS INJURY.

7.2.4 Photos may be included and shall be identified as a figure.

7.3 Subsection Title Describing Following Series of Actions

WEMCO Employee (Title of WEMCO employee or group responsible for completing the accompanying action steps)

7.3.1 Indicate employee or group action in progressive order.

8.0 APPLICABLE DOCUMENTS

8.1 Drivers - Administrative requirements creating need for the document.

8.2 Reference Documents - Documents required to complete actions or portions of actions identified in the document. Reference only documents issued through the Site Document Program. Department and Library Documents are not acceptable.

9.0 APPLICABLE FORMS

List form number and title used in the document.

10.0 FIGURES

10.1 List figure number and title of figures in the document.

SITE STANDARD OPERATING PROCEDURE (SSOP)
FORMAT AND CONTENT GUIDELINES
Figure 4 (Sheet 3 of 3)

CONTROL NO. _____

TEMPORARY REVISION

Page 1 of

SITE DOCUMENT PROGRAM

AFFECTED DOCUMENT NO. _____ TITLE:	TR NO. _____ ISSUE DATE: _____ EXPIRATION DATE: _____

FILING INSTRUCTIONS: File facing Page of document , Rev. , Dated .

Owner/Staff Manager Authorization _____ Date _____

AFFECTED STAFF MANAGERS

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

TR REVIEW REQUIREMENTS

AFFECTED STAFF MANAGER REVIEW/COMMENT REQUIREMENTS:

1. Within 30 days of TR issue date review TR. If there are comments, transmit document review comment sheet to owner.

OWNER/STAFF MANAGER TR REVIEW COMMENT EVALUATION:

1. Review and determine applicability of affected manager TR review comments.
2. If TR review comments require change of TR as written, submit a request to revise affected document to Documentation Control within 60 days of TR issue date

DOCUMENTATION CONTROL (DC)

1. DC shall incorporate TR in affected document as issued if no request has been submitted by document owner.

TEMPORARY REVISION DOCUMENT
Figure 5

RECORD OF ISSUE/REVISIONS

Date	REV. NO.	DESCRIPTION AND AUTHORITY
08-28-91	0	New procedure required to define the FEMP Site Document System per Request No. P91-157, initiated by N. K. Weichold.

SDI-100

SITE DOCUMENT INDEX

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT COMPANY OF OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

JUNE 1, 1992

(Supersedes Index Dated MAY 1, 1992)

3511

101

SITE DOCUMENT INDEX
June 1, 1992

TABLE OF CONTENTS

SECTION	TITLE	PAGE
	Introduction	iii
1	Alphanumeric Listing	1-1
2	Document Type Listing	
	Charters	2-1
	Interim Documents	2-2
	Manuals	2-3
	Plans	2-5
	Policies and Procedures	2-6
	Site Standard Operating Procedures	2-9
3	Site Document Changes	3-1

102 3511

SITE DOCUMENT INDEX
June 1, 1992

INTRODUCTION

The Site Document Index is a multiple listing of current site documents. The index is divided into three sections.

Sections 1 and 2 provide two different presentations of the current site documents. Section 1 is a list of the site documents sorted alphanumerically. Section 2 is a list of the site documents sectioned by document type and sorted numerically. Section 3 is a list of the Site Document Changes (SDC).

The index is distributed monthly. As documents are issued, revised, or cancelled, it is suggested that a manual update be made in the index until the issuance of a new index.

Site Document Stations are being established to provide a reference area for site documents at central locations for employee accessibility. Two stations have been set up and are located in the North 7-Plex Library (Station No. N7-0001) and on the second floor of the Safety and Health Bldg. in Room 233 (Station No. S&H-0001).

Direct questions pertaining to the index to Documentation Control, X-6545.

SECTION 1

ALPHANUMERIC LISTING

3511

DOCUMENT.NO.	TYPE OF DOCUMENT	TITLE	EFFECTIVE DATE	REV. NO.	SME	DOC.OWNER	SUPERSEDES	EXPIRATION DATE
CH-0210	SITE-CH	BEST MANAGEMENT PRACTICES COMMITTEE FOR CLEAN WATER	05/26/92	0	BECKMAN	SAVAGE	FMPC-0210	
CH-0221	SITE-CH	HUMAN RESOURCES CHARTER	08/23/91	0	CRISLER	CRISLER	FMPC-0221	
CH-0226	SITE-CH	ENVIRONMENTAL COMPLIANCE AND QUALITY ASSURANCE (EC&QA) DEPARTMENT CHARTER	10/14/91	0	SPRADLIN	SAVAGE	FMPC-0226	
CH-0235	SITE-CH	OPERATIONAL EXCELLENCE BOARD CHARTER	10/09/91	0	EMMERT	DECHTER	FMPC-0235	
CH-2000	SITE-CH	COMMUNICATIONS DEPARTMENT CHARTER	05/05/92	0	JACKSON	MOHR	CH-FMPC-2000	
CH-2004	SITE-CH	ENGINEERING DEPARTMENT CHARTER	05/13/92	0	NORTH	SOLOMON	CH-FMPC-2004	
CH-2005	SITE-CH	ASBESTOS MANAGEMENT COMMITTEE CHARTER	04/20/92	0	MCCULLOUGH	VOLPE	NONE	
CH-2007	SITE-CH	FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (FEMP) LEVEL 3 AND LEVEL 2 CHANGE CONTROL BOARDS	05/13/92	1	ALDRICH	REED	NONE	
CH-2008	SITE-CH	RESOURSE PLANNING, SCHEDULING, AND INTEGRATION	03/02/92	0	DEN HERDER	DEN HERDER	CH-2003	
CH-FMPC-0203	SITE-CH	ALARA COMMITTEE	08/03/91	0	TSCHAENN	VOLPE	FMPC-0203	
CH-FMPC-0209	SITE-CH	INDEPENDENT SAFETY REVIEW COMMITTEE CHARTER	01/31/91	0	CLICK	BOGAR	FMPC-0209	
CH-FMPC-0215	SITE-CH	SITE SERVICES DEPARTMENT CHARTER	07/05/91	0	EMMERT	DECHTER	FMPC-0215	
CH-FMPC-0220	SITE-CH	CONTROLLER CHARTER	07/05/91	0	REED	REED	FMPC-0220	
CH-FMPC-0222	SITE-CH	OFFICE OF COUNSEL CHARTER	07/27/91	0	FRANKLIN	FRANKLIN	FMPC-0222	
CH-FMPC-0230	SITE-CH	INDUSTRIAL, RADIOLOGICAL SAFETY, AND TRAINING DEPARTMENT CHARTER	08/28/91	1	GABBARD	VOLPE	CH-FMPC-0230	
CH-FMPC-2006	SITE-CH	COST EFFICIENCY PROGRAM CHARTER	07/22/91	0	GRUMSKI	GRUMSKI	NONE	
ED-0001	SITE-SSOP	EVENT NOTIFICATION AND REPORTING	02/14/92	0	MCCLANE	VOLPE	OM-FMPC-0001	
FD-1003	SITE-PL	NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) COMPLIANCE PLAN	10/04/91	0	RATHGENS	FARMER	FMPC-2208	
FMPC-0101	SITE-PP	WMCO MANAGEMENT PHILOSOPHY	01/12/90	1	DEN HERDER	DEN HERDER	NONE	
FMPC-0102	SITE-PP	TRAINING	01/16/91	1	POLUS	VOLPE	NONE	
FMPC-0105	SITE-PP	ACCESS OF PERSONNEL, VISITORS AND VEHICLES TO THE FMPC	12/16/88	1	MILLER	VOLPE	NONE	
FMPC-0106	SITE-PP	EMPLOYMENT AND INDOCTRINATION OF NEW PERSONNEL	04/04/88	0	CRISLER	CRISLER	NONE	
FMPC-0110	SITE-PP	DRUG-FREE WORKPLACE/SUBSTANCE ABUSE	08/18/89	1	CRISLER	CRISLER	NONE	
FMPC-0113	SITE-PP	WORKERS' COMPENSATION CLAIMS	12/16/88	0	CRISLER	CRISLER	NONE	
FMPC-0121	SITE-PP	SEXUAL HARASSMENT	11/21/89	2	CRISLER	CRISLER	NONE	
FMPC-0122	SITE-PP	OPEN COMMUNICATION OF EMPLOYEE CONCERNS	02/26/90	1	CRISLER	CRISLER	NONE	
FMPC-0124	SITE-PP	EQUAL EMPLOYMENT OPPORTUNITY	04/23/90	2	CRISLER	CRISLER	NONE	
FMPC-0126	SITE-PP	EMPLOYEE ASSISTANCE PROGRAM	12/11/89	0	CRISLER	CRISLER	NONE	
FMPC-0202	SITE-CH	STRATEGIC MANAGEMENT BOARD CHARTER	06/30/89	0	DECHTER	DECHTER	NONE	
FMPC-0208	SITE-CH	SUBCONTRACT REVIEW COMMITTEE CHARTER	08/14/89	1	REED	REED	NONE	
FMPC-0211	SITE-CH	PATENT REVIEW COMMITTEE CHARTER	07/19/90	1	GALPER	BOGAR	NONE	
FMPC-0212	SITE-CH	ENVIRONMENTAL COUNCIL CHARTER	11/03/89	0	FARMER	FARMER	NONE	

DOCUMENT.NO	TYPE OF DOCUMENT	TITLE	EFFECTIVE DATE	REV. NO.	SME	DOC.OWNER	SUPERSEDES	EXPIRATION DATE
FMPC-0217	SITE-CH	TECHNICAL DIRECTOR CHARTER	07/29/88	0	BOGAR	BOGAR	NONE	
FMPC-0223	SITE-CH	SITE REMEDIATION DEPARTMENT CHARTER	07/29/88	0	FARMER	FARMER	NONE	
FMPC-0231	SITE-CH	COMPUTER SYSTEMS STEERING COMMITTEE CHARTER	04/12/90	0	REED	REED	NONE	
FMPC-0232	SITE-CH	WMCO TOTAL QUALITY COUNCIL CHARTER	02/12/90	0	MOHR	MOHR	NONE	
FMPC-0233	SITE-CH	TRANSPORTATION SAFETY COMMITTEE CHARTER	05/14/90	0	DECHTER	DECHTER	NONE	
FMPC-0234	SITE-CH	READINESS REVIEW BOARD CHARTER	08/03/90	0	HUEY	DECHTER	NONE	
FMPC-0302	SITE-PP	REQUEST FOR PURCHASE	01/06/92	3	REED	REED	NONE	
FMPC-0303	SITE-PP	MANAGEMENT OF GOVERNMENT PROPERTY	02/15/89	0	REED	REED	NONE	
FMPC-0304	SITE-PP	HANDLING OF CONTROLLED SUBSTANCES AND SELECTED CHEMICALS	10/19/88	0	CRISLER	CRISLER	NONE	
FMPC-0306	SITE-PP	CONTRACT ADMINISTRATION	02/01/88	0	REED	REED	NONE	
FMPC-0307	SITE-PP	CONTROL AND ACCOUNTABILITY OF NUCLEAR MATERIALS	12/19/91	4	REED	REED	NONE	
FMPC-0315	SITE-PP	CONTROL OF PURCHASED SUPPLIES AND SERVICES	07/10/89	1	REED	REED	NONE	
FMPC-0316	SITE-PP	8 (A) VENDOR PROGRAM	06/04/90	2	REED	REED	NONE	
FMPC-0317	SITE-PP	TECHNICAL EVALUATION OF A PROPOSAL	03/24/88	0	REED	REED	NONE	
FMPC-0319	SITE-PP	MATERIAL COMPATIBILITY PRACTICES	01/26/90	0	FLEMING	VOLPE	NONE	
FMPC-0402	SITE-PP	FOREIGN TRAVEL	07/26/90	0	REED	REED	NONE	
FMPC-0412	SITE-PP	MANAGEMENT CONTROL SYSTEM POLICY	12/02/88	0	REED	REED	NONE	
FMPC-0503	SITE-PP	FMPC SPILL INCIDENT REPORTING AND CLEANUP	10/25/88	0	SAVAGE	SAVAGE	NONE	
FMPC-0505	SITE-PP	RADIATION CONTROL	12/02/88	0	VOLPE	VOLPE	NONE	
FMPC-0508	SITE-PP	SAFETY ANALYSIS DOCUMENTATION PROGRAM	10/31/88	1	CLICK	BOGAR	NONE	
FMPC-0511	SITE-PP	CONTROL OF ENTRY TO THE WASTE STORAGE AREA	08/24/90	1	DECHTER	DECHTER	NONE	
FMPC-0512	SITE-PP	CONFIGURATION CONTROL OF SAFETY SYSTEMS, DESIGN FEATURES FOR SAFETY, AND OSR-AFFECTED PROCEDURES	10/31/88	0	CLICK	BOGAR	NONE	
FMPC-0516	SITE-PP	CONTROL OF PERMITS FOR ACCOMPLISHING HAZARDOUS WORK	04/23/91	2	FLEMING	VOLPE	NONE	
FMPC-0517	SITE-PP	NUCLEAR CRITICALITY SAFETY	05/01/89	0	CLICK	BOGAR	NONE	
FMPC-0519	SITE-PP	MANAGEMENT OF HAZARDOUS WASTE	07/28/89	0	COYLE	FARMER	NONE	
FMPC-0603	SITE-PP	REQUESTING INFORMATION SYSTEMS SERVICES	11/21/89	0	REED	REED	NONE	
FMPC-0604	SITE-PP	PROTECTION OF SENSITIVE UNCLASSIFIED INFORMATION	10/15/87	0	REED	REED	NONE	
FMPC-0605	SITE-PP	DOE DIRECTIVES ADMINISTRATION	11/30/89	1	AMAN	DEN HERDER	NONE	
FMPC-0608	SITE-PP	PREPARATION AND RELEASE OF TECHNICAL INFORMATION	03/08/90	3	NEYER	FARMER	NONE	
FMPC-0609	SITE-PP	RECORDS MANAGEMENT	09/26/90	1	MOHR	MOHR	NONE	
FMPC-0611	SITE-PP	CONTROL OF FORMS	02/07/90	1	MOHR	MOHR	NONE	
FMPC-0612	SITE-PP	WMCO PERSONNEL CONTACTS WITH REGULATORY AGENCIES	01/13/89	1	SAVAGE	SAVAGE	NONE	
FMPC-0614	SITE-PP	UNCLASSIFIED COMPUTER SECURITY PROGRAM	04/23/90	0	REED	REED	NONE	
FMPC-0702	SITE-PP	DEVELOPMENT AND CONTROL OF DESIGN	03/05/90	1	SIMI	SOLOMON	NONE	

DOCUMENT.NO.	TYPE OF DOCUMENT	TITLE	EFFECTIVE DATE	REV. NO.	SME	DOC.OWNER	SUPERSEDES	EXPIRATION DATE
FMPC-0704	SITE-PP	MINOR EVENT REPORTING SYSTEM	08/24/89	2	DECHTER	DECHTER	NONE	
FMPC-0705	SITE-PP	OPERATIONAL READINESS PROCESS	01/21/92	3	DECHTER	DECHTER	NONE	
FMPC-0707	SITE-PP	AUDIT PROGRAM	10/27/89	1	WEISSENBERG	SAVAGE	NONE	
FMPC-0708	SITE-PP	PERSONNEL CERTIFICATION	12/15/89	2	HOFFMAN	VOLPE	NONE	
FMPC-0711	SITE-PP	QUALITY LEVELS	12/15/89	1	SAVAGE	SAVAGE	NONE	
FMPC-0715	SITE-PP	FMPC WORK REQUEST SYSTEM	03/02/89	0	DECHTER	DECHTER	NONE	
FMPC-0716	SITE-PP	CONTROL OF PROCESSES	06/20/90	1	DECHTER	DECHTER	NONE	
FMPC-0717	SITE-PP	INSPECTION	12/15/89	2	SAVAGE	SAVAGE	NONE	
FMPC-0718	SITE-PP	MEASURING AND TEST EQUIPMENT CALIBRATION AND CONTROL	01/12/90	2	DECHTER	DECHTER	NONE	
FMPC-2040	SITE-PL	FMPC WASTE MANAGEMENT PLAN	12/31/86	1	HEISLER	FARMER	NONE	
FMPC-2048	SITE-PL	FMPC ENVIRONMENTAL, SAFETY AND HEALTH MANAGEMENT PLAN	09/01/86	2	VOLPE	VOLPE	NLCO-2037	
FMPC-2055	SITE-RM	CLASSIFICATION GUIDE FOR THE FMPC	09/23/86	0	NEYER	DECHTER	NONE	
FMPC-2066	SITE-RM	T-HOPPER SHIPPING CONTAINER HANDLING PROCEDURES AND CONTAINER CRITERIA	08/31/87	0	GARDNER	DECHTER	NONE	
FMPC-2070	SITE-IM	STYLE AND FORMAT GUIDE FOR SCIENTIFIC AND TECHNICAL REPORTS, CORRESPONDENCE AND OTHER PRESENTATIONS	06/01/90	0	BECKMAN	MOHR	NONE	
FMPC-2081	SITE-IM	SUPERVISOR'S EMPLOYEE RELATIONS MANUAL	05/01/87	0	CRISLER	CRISLER	NONE	
FMPC-2092	SITE-RM	FMPC WELDING PROGRAM	05/01/88	0	ROMINE	DECHTER	NONE	
FMPC-2100	SITE-PL	OPERATIONAL SAFETY REQUIREMENTS FOR THE SOUTH AMMONIA STORAGE FACILITY	11/01/87	0	GARDNER	DECHTER	NONE	
FMPC-2112	SITE-IM	FMPC NUCLEAR CRITICALITY SAFETY GUIDE	09/01/89	0	CLICK	BOGAR	NONE	
FMPC-2113	SITE-IM	PRINCIPLES OF NUCLEAR SAFETY	07/08/87	0	CLICK	VOLPE	NONE	
FMPC-2114	SITE-PL	ENVIRONMENTAL, SAFETY, HEALTH AND WASTE MANAGEMENT PLAN	03/20/89	2	VOLPE	VOLPE	NONE	
FMPC-2116	SITE-RM	IMPLEMENTING FMPC POLICIES AND PROCEDURES FOR SYSTEM SAFETY ANALYSIS	01/01/89	0	CLICK	BOGAR	NLCO-1172	
FMPC-2117	SITE-RM	TOPICAL MANUAL FOR NUCLEAR CRITICALITY SAFETY	01/01/89	0	CLICK	BOGAR	NONE	
FMPC-2128	SITE-RM	FMPC INDUSTRIAL HYGIENE AND SAFETY MANUAL	04/04/89	0	WENTZEL	VOLPE	NONE	
FMPC-2133	SITE-PL	FMPC WASTE MINIMIZATION PLAN	07/22/88	0	FARMER	FARMER	NONE	
FMPC-2136	SITE-OM	FMPC PROJECT MANAGEMENT CONTROL SYSTEM APPLICATION GUIDE	04/03/89	0	REED	REED	NONE	
FMPC-2152	SITE-RM	FMPC RESPIRATORY PROTECTION MANUAL	04/17/90	1	MENGEL	VOLPE	NONE	
FMPC-2171	SITE-RM	STANDARD SPECIFICATIONS FOR DUST COLLECTOR EQUIPMENT	05/13/92	5	PALMER	SOLOMON	NONE	
FMPC-2175	SITE-PL	ABANDONED-IN-PLACE (AIP) EQUIPMENT PROGRAM WORK PLAN	06/01/89	0	DEN HERDER	DEN HERDER	NONE	
FMPC-2176	SITE-RM	OPERATIONAL SAFETY REQUIREMENTS FOR THE REMOVAL AND OVERPACKING PROGRAM FOR THE 212 CONTAINERS OF THORIUM	12/01/89	0	FARMER	FARMER	NONE	

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		METALS						
FMPC-2185	SITE-PL	SAMPLING PLAN FOR DRUMMED WASTE AT THE FMPC	10/01/89	0	ANGERT	FARMER	NONE	
FMPC-2194	SITE-PL	FMPC SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN	07/25/90	0	MERCADAL	FARMER	FMPC-2065	
FMPC-2201	SITE-OM	PROJECT MANAGEMENT PROCEDURES	01/20/92	2	HELMES	SOLOMON	FMPC-2063	
FMPC-2214	SITE-PL	ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT SITE SPECIFIC PLAN	07/01/90	0	JOHNSON	DEN HERDER	NONE	
OM-0003	SITE-OM	TEST AUTHORIZATION	04/03/92	0	VOYLES	SOLOMON	FMPC-2181	
OM-FMPC-0002	SITE-OM	PERSONNEL ACCOUNTABILITY	08/22/91	0	CORNWELL	VOLPE	FMPC-2148	
PL-3007	SITE-PL	NPDES PERMIT COMPLIANCE PLAN	09/10/91	0	JOHNSTON	SAVAGE	NONE	
PL-3008	SITE-PL	RADIONUCLIDE AIR EMISSIONS QUALITY ASSURANCE PROJECT PLAN (RAEQAPJP)	05/26/92	1	PALMER	FARMER	NONE	
PL-3010	SITE-PL	FY-1992 ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT SITE SPECIFIC PLAN	09/10/91	0	MCDONALD	REED	NONE	
PL-3015	SITE-PL	FEMP EMERGENCY PLAN	11/27/91	0	CORNWELL	VOLPE	FMPC-2046	
PL-3016I.1	SITE-INTERIM	EVALUATION & ASSESSMENT SYSTEM (EASY) A MANAGEMENT SELF-ASSESSMENT PROCESS PLAN	05/18/92	N/A	BOBACK	GRUMSKI	PL-3016I	11/18/92
PL-FMPC-3001	SITE-PL	LABORATORY CHEMICAL HYGIENE PLAN	01/15/91	0	MENGEL	VOLPE	NONE	
PL-FMPC-3002	SITE-PL	ASBESTOS MANAGEMENT PLAN	09/28/90	0	MCCULLOUGH	FARMER	NONE	
PL-FMPC-3006	SITE-PL	MATERIALS CONTROL AND ACCOUNTABILITY PLAN	06/18/91	1	DITTMER	REED	FMPC-2115	
PL-FMPC-3009	SITE-PL	WASTE MINIMIZATION & POLLUTION PREVENTION AWARENESS PLAN	04/30/91	0	ALLMON	DECHTER	FMPC-2205	
PO-0712	SITE-PP	RISK ASSESSMENT AND MANAGEMENT (RAM) SYSTEM POLICY	01/25/92	0	WERNER	BOGAR	IN-6034	
PO-FMPC-1001	SITE-PO	CONDUCT OF OPERATIONS POLICY	08/24/90	0	DECHTER	DECHTER	NONE	
PP-0103	SITE-PP	SITE DOCUMENT SYSTEM	08/28/91	0	TILNEY	DEN HERDER	IN-FMPC-6007	
PP-0125	SITE-PP	EMERGENCY MANAGEMENT	09/06/91	0	CORNWELL	VOLPE	FMPC-0125	
PP-0309	SITE-PP	MANAGEMENT OF WEMCO SITE PRECIOUS METALS	05/19/92	0	TAYLOR	REED	FMPC-0309	
PP-0310	SITE-PP	PERSONAL COMPUTER PROCUREMENT	09/12/91	0	GIBSON	REED	NONE	
PP-0314	SITE-PP	PACKAGING, ON-SITE MOVEMENT AND OFF-SITE SHIPMENT OF MATERIAL	12/20/91	0	MCGROGAN	DECHTER	FMPC-0314	
PP-0408	SITE-PP	TRAVEL AND SEMINAR AUTHORIZATION AND REPORTING	02/03/92	0	CALDWELL	REED	IN-6037	
PP-0518	SITE-PP	NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) PROGRAM	10/01/91	0	RATHGENS	FARMER	FMPC-0518	
PP-0602	SITE-PP	CENTRALIZED COMMITMENT CONTROL	08/28/91	0	GESSENDORF	DEN HERDER	FMPC-0602	
PP-0709	SITE-PP	CONDUCT OF INDEPENDENT SURVEILLANCE ACTIVITY	12/31/91	0	MERRIMAN	SAVAGE	FMPC-0709	
PP-0710	SITE-PP	QUALITY ASSURANCE PLANS	11/14/91	0	MERRIMAN	SAVAGE	IN-6012	
PP-0721	SITE-PP	TEST AUTHORIZATION	04/06/92	0	VOYLES	SOLOMON	FMPC-0721	

DOCUMENT.NO.	TYPE OF DOCUMENT	TITLE	EFFECTIVE DATE	REV. NO.	SME	DOC.OWNER	SUPERSEDES	EXPIRATION DATE
PP-0722	SITE-PP	REQUESTING ENGINEERING SERVICES	11/06/91	0	SIMI	SOLOMON	FMPC-0722	
PP-5009	SITE-PP	BUSINESS MEETING/TRAINING ARRANGEMENTS AND EXPENDITURES	11/04/91	1	TAYLOR	REED	PP-5009	
PP-5023	SITE-PP	FIRE PROTECTION POLICY	09/20/91	0	STEMEN	VOLPE	NONE	
PP-5025	SITE-PP	MEMBERSHIPS IN TECHNICAL, PROFESSIONAL, BUSINESS, OR TRADE ORGANIZATIONS	10/08/91	0	CALDWELL	REED	NONE	
PP-5030	SITE-PP	CHANGE PROPOSAL PROCEDURE	10/29/91	0	ALDRICH	REED	NONE	
PP-5031	SITE-PP	NUCLEAR MATERIALS DISPOSITION ORDER MANAGEMENT SYSTEM	10/29/91	0	DUNAWAY	REED	IN-6009	
PP-5034	SITE-PP	COST REDUCTION PROGRAM	03/16/92	0	GRUMSKI	GRUMSKI	IN-6011	
PP-6003	SITE-PP	OFFICE MACHINE ACQUISITION CONTROL	10/11/91	0	VIOX	REED	IN-FMPC-6003	
PP-FMPC-0123	SITE-PP	SMOKING RESTRICTIONS AND CONTROL	03/28/91	0	SASKOWSKY	CRISLER	FMPC-0123	
PP-FMPC-0610	SITE-PP	PATENT AND INVENTION DISCLOSURE	07/31/91	0	CHEN	BOGAR	NONE	
PP-FMPC-0719	SITE-PP	ENERGY CONTROL (LOCKOUT AND TAGOUT)	02/15/91	0	MILLER	DECHTER	FMPC-0719	
PP-FMPC-5003	SITE-PP	CORRESPONDENCE DIRECTIVE	12/13/90	0	MCDONOUGH	MOHR	NONE	
PP-FMPC-5004	SITE-PP	RESPONSE TO PUBLIC INFORMATION REQUESTS	11/16/90	0	WALKER	MOHR	FMPC-0618	
PP-FMPC-5007	SITE-PP	TYPE A, B, AND C, INVESTIGATIONS	02/05/92	1	LEIST	VOLPE	NONE	
PP-FMPC-5010	SITE-PP	MANAGEMENT OF LOW-LEVEL WASTE (LLW)	12/26/90	0	ALLMON	DECHTER	NONE	
PP-FMPC-5012	SITE-PP	MANAGEMENT OF TELECOMMUNICATIONS EQUIPMENT AND SERVICES	01/31/91	0	GIBSON	REED	NONE	
PP-FMPC-5013	SITE-PP	ACQUISITION OF AUTOMATED DATA PROCESSING EQUIPMENT, SOFTWARE, AND SERVICE	04/16/91	0	GIBSON	REED	NONE	
PP-FMPC-5014	SITE-PP	MANAGEMENT INSPECTION OF FACILITIES PROGRAM (MIFP)	03/26/91	0	LEIST	GRUMSKI	NONE	
PP-FMPC-5019	SITE-PP	ACTIVITY DATA SHEET (ADS) FUNDING CHANGE CONTROL	08/09/91	0	JOHNSON	DEN HERDER	IN-FMPC-6005	
PR-FMPC-4006	SITE-PR	OCCURRENCE REPORTS	11/16/90	0	BOBACK	GRUMSKI	FMPC-0703	
RM-0003	SITE-RM	UNCLASSIFIED COMPUTER SECURITY PROGRAM MANUAL	10/09/91	0	GIBSON	REED	IN-RM-FMPC-0003	
RM-0004	SITE-RM	TECHNICAL SUPPORT STAFF SELECTION, TRAINING, AND QUALIFICATION PROGRAM	02/07/92	0	WERNER	VOLPE	NONE	
RM-0005	SITE-RM	FEMP LOT MARKING AND COLOR CODING SYSTEM	12/27/91	1	DUNAWAY	REED	FMPC-2178	
RM-0006	SITE-RM	INDUSTRIAL SAFETY	05/22/92	0	CONNELL	VOLPE	RM-00061.1	
RM-0009	SITE-RM	RADIOLOGICAL CONTROLS	05/13/92	0	ROGERS	VOLPE	RM-00091	
RM-0011	SITE-RM	CONTROL OF OCCUPATIONAL EXPOSURE OF BLOODBORNE PATHOGENS	05/27/92	0	CLARK	CRISLER	NONE	
RM-0012	SITE-RM	QUALITY ASSURANCE PROGRAM DESCRIPTION	04/30/92	0	MALONE	SAVAGE	PL-3014	
RM-FMPC-0001	SITE-RM	FMPC GENERAL DESIGN CRITERIA MANUAL	09/28/90	0	SIMI	SOLOMON	FMPC-2069	
RM-FMPC-0002	SITE-RM	CENTRALIZED TRAINING PROGRAM MANUAL	01/29/91	0	JOHNSON	VOLPE	NONE	
SC92-005	SITE-SDC	PACKAGING LOW LEVEL RADIOACTIVE WASTE FOR OFFSITE DISPOSAL	04/29/92	N/A	HUNDLEY	DECHTER	NONE	10/29/92

DOCUMENT.NO	TYPE OF DOCUMENT	TITLE	EFFECTIVE DATE	REV. NO.	BME	DOC.OWNER	SUPERSEDES	EXPIRATION DATE
SC92-006	SITE-SDC	PACKAGING LOW LEVEL RADIOACTIVE WASTE FOR OFFSITE DISPOSAL	04/29/92	N/A	HUNDLEY	DECHTER	NONE	10/29/92
SC92-007	SITE-SDC	PACKAGING LOW LEVEL RADIOACTIVE WASTE FOR OFFSITE DISPOSAL	04/29/92	N/A	HUNDLEY	DECHTER	NONE	10/29/92
SC92-008	SITE-SDC	PACKAGING LOW LEVEL RADIOACTIVE WASTE FOR OFFSITE DISPOSAL	04/29/92	N/A	HUNDLEY	DECHTER	NONE	10/29/92
SC92-013	SITE-SDC	FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (FEMP) LEVEL 3 AND LEVEL 2 CHANGE CONTROL BOARDS	04/10/92	N/A	NEYER	REED	NONE	10/12/92
SC92-014	SITE-SDC	SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN	05/14/92	N/A	MERCADAL	FARMER	NONE	11/16/92
SC92-015	SITE-SDC	REQUEST FOR PURCHASE	04/30/92	N/A	REED	REED	NONE	10/30/92
SC92-016	SITE-SDC	REQUEST FOR PURCHASE	04/30/92	N/A	REED	REED	NONE	10/30/92
SC92-017	SITE-SDC	REQUEST FOR PURCHASE	04/30/92	N/A	REED	REED	NONE	10/30/92
SC92-018	SITE-SDC	REQUEST FOR PURCHASE	04/30/92	N/A	REED	REED	NONE	10/30/92
SC92-019	SITE-SDC	REQUEST FOR PURCHASE	04/30/92	N/A	REED	REED	NONE	10/30/92
SC92-020	SITE-SDC	OCCURRENCE REPORTS	05/14/92	N/A	BOBACK	GRUMSKI	NONE	11/16/92
SC92-021	SITE-SDC	OCCURRENCE REPORTS	05/14/92	N/A	BOBACK	GRUMSKI	NONE	11/16/92
SC92-022	SITE-SDC	OCCURRENCE REPORTS	05/14/92	N/A	BOBACK	GRUMSKI	NONE	11/16/92
SM-0001	SITE-SM	RISK ASSESSMENT AND MANAGEMENT (RAM) SYSTEM MANUAL	01/25/92	0	WERNER	BOGAR	IN-6035 IN-6036	
SSOP-0002	SITE-SSOP	COMPLETING THE MATERIAL EVALUATION FORM	10/22/91	3	HAMBLIN	DECHTER	NONE	
SSOP-0003	SITE-SSOP	RECEIVING, ON-SITE MOVEMENT AND OFF-SITE SHIPMENT OF NON-RADIOACTIVE HAZARDOUS MATERIAL	04/30/92	1	STAPLETON	DECHTER	NONE	
SSOP-0005	SITE-SSOP	CLEARANCE DOCUMENT PREPARATION FOR ACQUISITION PLAN CHANGE	04/16/91	0	GIBSON	REED	NONE	
SSOP-0006	SITE-SSOP	PREPARING AN ACQUISITION PLAN FOR COMPUTER-RELATED PURCHASES	04/16/91	0	GIBSON	REED	NONE	
SSOP-0007	SITE-SSOP	OBTAINING SIGNATURE AUTHORIZATION FOR THE APPROVAL OF DISBURSEMENTS	04/16/91	0	TAYLOR	REED	NONE	
SSOP-0008	SITE-SSOP	PREPARING AND TRANSFERRING UNCHARACTERIZED WASTE TO THE CONTROLLED HOLDING AREA	01/13/92	1	OGG	DECHTER	NONE	
SSOP-0011	SITE-SSOP	QUALIFICATION OF HEPA FILTER TEST PERSONNEL	08/28/91	0	PALMER	DECHTER	NONE	
SSOP-0013	SITE-SSOP	DOCUMENTATION OF EXCEPTION TO TRAINING	09/20/91	0	WERNER	VOLPE	NONE	
SSOP-0014	SITE-SSOP	DOCUMENTATION OF A SUBJECT MATTER EXPERT (SME)	06/03/91	0	WERNER	VOLPE	NONE	
SSOP-0016	SITE-SSOP	ACCESS & EXIT REQUIREMENTS FOR VEHICLES USED IN CONTROLLED AREAS	09/16/91	0	CALHOUN	VOLPE	NONE	
SSOP-0018	SITE-SSOP	PROCESSING THE SITE-WIDE ANALYSIS REQUEST/CUSTODY	05/07/92	1	MADARIS	DECHTER	NONE	

DOCUMENT.NO.	TYPE OF DOCUMENT	TITLE	EFFECTIVE DATE	REV. NO.	SME	DOC.OWNER	SUPERSEDES	EXPIRATION DATE
		RECORD FOR SAMPLE CONTROL						
SSOP-0022	SITE-SSOP	QUALIFICATION PROGRAM TRAINING COMPLETION DOCUMENTATION	01/24/92	0	PLACE	VOLPE	NONE	
SSOP-0023	SITE-SSOP	DEVIATION AND CORRECTIVE ACTION REPORTING	02/04/92	1	MALONE	SAVAGE	NONE	
SSOP-0024	SITE-SSOP	PACKAGING LOW LEVEL RADIOACTIVE WASTE (LLRW) FOR OFF-SITE DISPOSAL	10/14/91	0	DUNBAR	DECHTER	20-C-601	
SSOP-0027	SITE-SSOP	CONTROL OF BOX-TYPE CONTAINERS	02/07/92	0	DUNBAR	DECHTER	NONE	
SSOP-0028	SITE-SSOP	CONTROLLING PORTABLE VENTILATION DEVICES AND VACUUM CLEANERS	12/20/91	0	GRIFFITH	DECHTER	NONE	
SSOP-0030	SITE-SSOP	ACQUISITION OF PERSONAL COMPUTERS, PERIPHERAL EQUIPMENT AND SOFTWARE	09/12/91	0	GIBSON	REED	FMPC-0310	
SSOP-0031	SITE-SSOP	NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DOCUMENT PROCESS	10/01/91	0	RATHGENS	FARMER	NONE	
SSOP-0034	SITE-SSOP	NUCLEAR MATERIALS DISPOSITION ORDER MANAGEMENT	10/29/91	0	KAUSHIVA	DEN HERDER	IN-6010	
SSOP-0036	SITE-SSOP	QUALITY ASSURANCE PROJECT PLANS	11/14/91	0	MERRIMAN	SAVAGE	IN-6014	
SSOP-0041	SITE-SSOP	PREVENTING URANIUM LOSSES THROUGH THE STORM SEWER TO THE ENVIRONMENT (RESPONDING TO PH ALARMS)	04/21/92	0	GLASSMEYER	DECHTER	2-C-914	
SSOP-0059	SITE-SSOP	CONTROL AND TRACKING OF CHEMICAL SUBSTANCES	05/26/92	0	OGG	DEN HERDER	NONE	
SSOP-0060	SITE-SSOP	PACKAGING RADIOACTIVE MATERIAL FOR OFFSITE SHIPMENT	04/10/92	0	OGG	DEN HERDER	NONE	
TR-SP-6001	SITE-SSOP	REQUESTING TRAINING FOR AN ACTIVITY	05/26/92	0	HOFFMAN	VOLPE	NONE	

SECTION 2

DOCUMENT TYPE LISTING

- Charters
- Interims
- Manuals
- Plans
- Policies And Procedures
- Site Standard Operating Procedures

CHARTERS

DOCUMENT.NO.	TITLE	EFFECTIVE. DATE	REV. NO.	SME	DOC.OWNER	SUPERSEDES
FMPC-0202	STRATEGIC MANAGEMENT BOARD CHARTER	06/30/89	0	DECHTER	DECHTER	NONE
CH-FMPC-0203	ALARA COMMITTEE	08/03/91	0	TSCHAENN	VOLPE	FMPC-0203
FMPC-0208	SUBCONTRACT REVIEW COMMITTEE CHARTER	08/14/89	1	REED	REED	NONE
CH-FMPC-0209	INDEPENDENT SAFETY REVIEW COMMITTEE CHARTER	01/31/91	0	CLICK	BOGAR	FMPC-0209
CH-0210	BEST MANAGEMENT PRACTICES COMMITTEE FOR CLEAN WATER	05/26/92	0	BECKMAN	SAVAGE	FMPC-0210
FMPC-0211	PATENT REVIEW COMMITTEE CHARTER	07/19/90	1	GALPER	BOGAR	NONE
FMPC-0212	ENVIRONMENTAL COUNCIL CHARTER	11/03/89	0	FARMER	FARMER	NONE
CH-FMPC-0215	SITE SERVICES DEPARTMENT CHARTER	07/05/91	0	EMMERT	DECHTER	FMPC-0215
FMPC-0217	TECHNICAL DIRECTOR CHARTER	07/29/88	0	BOGAR	BOGAR	NONE
CH-FMPC-0220	CONTROLLER CHARTER	07/05/91	0	REED	REED	FMPC-0220
CH-0221	HUMAN RESOURCES CHARTER	08/23/91	0	CRISLER	CRISLER	FMPC-0221
CH-FMPC-0222	OFFICE OF COUNSEL CHARTER	07/27/91	0	FRANKLIN	FRANKLIN	FMPC-0222
FMPC-0223	SITE REMEDIATION DEPARTMENT CHARTER	07/29/88	0	FARMER	FARMER	NONE
CH-0226	ENVIRONMENTAL COMPLIANCE AND QUALITY ASSURANCE (EC&QA) DEPARTMENT CHARTER	10/14/91	0	SPRADLIN	SAVAGE	FMPC-0226
CH-FMPC-0230	INDUSTRIAL, RADIOLOGICAL SAFETY, AND TRAINING DEPARTMENT CHARTER	08/28/91	1	GABBARD	VOLPE	CH-FMPC-0230
FMPC-0231	COMPUTER SYSTEMS STEERING COMMITTEE CHARTER	04/12/90	0	REED	REED	NONE
FMPC-0232	WMCO TOTAL QUALITY COUNCIL CHARTER	02/12/90	0	MOHR	MOHR	NONE
FMPC-0233	TRANSPORTATION SAFETY COMMITTEE CHARTER	05/14/90	0	DECHTER	DECHTER	NONE
FMPC-0234	READINESS REVIEW BOARD CHARTER	08/03/90	0	HUEY	DECHTER	NONE
CH-0235	OPERATIONAL EXCELLENCE BOARD CHARTER	10/09/91	0	EMMERT	DECHTER	FMPC-0235
CH-2000	COMMUNICATIONS DEPARTMENT CHARTER	05/05/92	0	JACKSON	MOHR	CH-FMPC-2000
CH-2004	ENGINEERING DEPARTMENT CHARTER	05/13/92	0	NORTH	SOLOMON	CH-FMPC-2004
CH-2005	ASBESTOS MANAGEMENT COMMITTEE CHARTER	04/20/92	0	MCCULLOUGH	VOLPE	NONE
CH-FMPC-2006	COST EFFICIENCY PROGRAM CHARTER	07/22/91	0	GRUMSKI	GRUMSKI	NONE
CH-2007	FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (FEMP) LEVEL 3 AND LEVEL 2 CHANGE CONTROL BOARDS	05/13/92	1	ALDRICH	REED	NONE
CH-2008	RESOURSE PLANNING, SCHEDULING, AND INTEGRATION	03/02/92	0	DEN HERDER	DEN HERDER	CH-2003

INTERIMS

DOCUMENT.NO.	TITLE	EFFECTIVE. DATE	EXPIRATION DATE	SME	DOC.OWNER	SUPERSEDES
PL-3016I.1	EVALUATION & ASSESSMENT SYSTEM (EASY) A MANAGEMENT SELF-ASSESSMENT PROCESS PLAN	05/18/92	11/18/92	BOBACK	GRUMSKI	PL-3016I

MANUALS

DOCUMENT.NO.	TITLE	EFFECTIVE. DATE	REV. NO.	SME	DOC.OWNER	SUPERSEDES
RM-FMPC-0001	FMPC GENERAL DESIGN CRITERIA MANUAL	09/28/90	0	SIMI	SOLOMON	FMPC-2069
SM-0001	RISK ASSESSMENT AND MANAGEMENT (RAM) SYSTEM MANUAL	01/25/92	0	WERNER	BOGAR	IN-6035 IN-6036
OM-FMPC-0002	PERSONNEL ACCOUNTABILITY	08/22/91	0	CORNWELL	VOLPE	FMPC-2148
RM-FMPC-0002	CENTRALIZED TRAINING PROGRAM MANUAL	01/29/91	0	JOHNSON	VOLPE	NONE
OM-0003	TEST AUTHORIZATION	04/03/92	0	VOYLES	SOLOMON	FMPC-2181
RM-0003	UNCLASSIFIED COMPUTER SECURITY PROGRAM MANUAL	10/09/91	0	GIBSON	REED	IN-RM-FMPC-0003
RM-0004	TECHNICAL SUPPORT STAFF SELECTION, TRAINING, AND QUALIFICATION PROGRAM	02/07/92	0	WERNER	VOLPE	NONE
RM-0005	FEMP LOT MARKING AND COLOR CODING SYSTEM	12/27/91	1	DUNAWAY	REED	FMPC-2178
RM-0006	INDUSTRIAL SAFETY	05/22/92	0	CONNELL	VOLPE	RM-00061.1
RM-0009	RADIOLOGICAL CONTROLS	05/13/92	0	ROGERS	VOLPE	RM-00091
RM-0011	CONTROL OF OCCUPATIONAL EXPOSURE OF BLOODBORNE PATHOGENS	05/27/92	0	CLARK	CRISLER	NONE
RM-0012	QUALITY ASSURANCE PROGRAM DESCRIPTION	04/30/92	0	MALONE	SAVAGE	PL-3014
FMPC-2055	CLASSIFICATION GUIDE FOR THE FMPC	09/23/86	0	NEYER	DECHTER	NONE
FMPC-2066	T-HOPPER SHIPPING CONTAINER HANDLING PROCEDURES AND CONTAINER CRITERIA	08/31/87	0	GARDNER	DECHTER	NONE
FMPC-2070	STYLE AND FORMAT GUIDE FOR SCIENTIFIC AND TECHNICAL REPORTS, CORRESPONDENCE AND OTHER PRESENTATIONS	06/01/90	0	BECKMAN	MOHR	NONE
FMPC-2081	SUPERVISOR'S EMPLOYEE RELATIONS MANUAL	05/01/87	0	CRISLER	CRISLER	NONE
FMPC-2092	FMPC WELDING PROGRAM	05/01/88	0	ROMINE	DECHTER	NONE
FMPC-2112	FMPC NUCLEAR CRITICALITY SAFETY GUIDE	09/01/89	0	CLICK	BOGAR	NONE
FMPC-2113	PRINCIPLES OF NUCLEAR SAFETY	07/08/87	0	CLICK	VOLPE	NONE
FMPC-2116	IMPLEMENTING FMPC POLICIES AND PROCEDURES FOR SYSTEM SAFETY ANALYSIS	01/01/89	0	CLICK	BOGAR	NLCO-1172
FMPC-2117	TOPICAL MANUAL FOR NUCLEAR CRITICALITY SAFETY	01/01/89	0	CLICK	BOGAR	NONE
FMPC-2128	FMPC INDUSTRIAL HYGIENE AND SAFETY MANUAL	04/04/89	0	WENTZEL	VOLPE	NONE
FMPC-2136	FMPC PROJECT MANAGEMENT CONTROL SYSTEM APPLICATION GUIDE	04/03/89	0	REED	REED	NONE
FMPC-2152	FMPC RESPIRATORY PROTECTION MANUAL	04/17/90	1	MENGEL	VOLPE	NONE
FMPC-2171	STANDARD SPECIFICATIONS FOR DUST COLLECTOR EQUIPMENT	05/13/92	5	PALMER	SOLOMON	NONE

MANUALS

DOCUMENT.NO.	TITLE	EFFECTIVE. DATE	REV. NO.	SME	DOC.OWNER	SUPERSEDES
FMPC-2176	OPERATIONAL SAFETY REQUIREMENTS FOR THE REMOVAL AND OVERPACKING PROGRAM FOR THE 212 CONTAINERS OF THORIUM METALS	12/01/89	0	FARMER	FARMER	NONE
FMPC-2201	PROJECT MANAGEMENT PROCEDURES	01/20/92	2	HELMES	SOLOMON	FMPC-2063

PLANS

DOCUMENT.NO.	TITLE	EFFECTIVE. DATE	REV... NO.	SME	DOC.OWNER	SUPERSEDES
FD-1003	NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) COMPLIANCE PLAN	10/04/91	0	RATHGENS	FARMER	FMPC-2208
FMPC-2040	FMPC WASTE MANAGEMENT PLAN	12/31/86	1	HEISLER	FARMER	NONE
FMPC-2048	FMPC ENVIRONMENTAL, SAFETY AND HEALTH MANAGEMENT PLAN	09/01/86	2	VOLPE	VOLPE	NLCO-2037
FMPC-2100	OPERATIONAL SAFETY REQUIREMENTS FOR THE SOUTH AMMONIA STORAGE FACILITY	11/01/87	0	GARDNER	DECHTER	NONE
FMPC-2114	ENVIRONMENTAL, SAFETY, HEALTH AND WASTE MANAGEMENT PLAN	03/20/89	2	VOLPE	VOLPE	NONE
FMPC-2133	FMPC WASTE MINIMIZATION PLAN	07/22/88	0	FARMER	FARMER	NONE
FMPC-2175	ABANDONED-IN-PLACE (AIP) EQUIPMENT PROGRAM WORK PLAN	06/01/89	0	DEN HERDER	DEN HERDER	NONE
FMPC-2185	SAMPLING PLAN FOR DRUMMED WASTE AT THE FMPC	10/01/89	0	ANGERT	FARMER	NONE
FMPC-2194	FMPC SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN	07/25/90	0	MERCADAL	FARMER	FMPC-2065
FMPC-2214	ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT SITE SPECIFIC PLAN	07/01/90	0	JOHNSON	DEN HERDER	NONE
PL-FMPC-3001	LABORATORY CHEMICAL HYGIENE PLAN	01/15/91	0	MENGEL	VOLPE	NONE
PL-FMPC-3002	ASBESTOS MANAGEMENT PLAN	09/28/90	0	MCCULLOUGH	FARMER	NONE
PL-FMPC-3006	MATERIALS CONTROL AND ACCOUNTABILITY PLAN	06/18/91	1	DITTMER	REED	FMPC-2115
PL-3007	NPDES PERMIT COMPLIANCE PLAN	09/10/91	0	JOHNSTON	SAVAGE	NONE
PL-3008	RADIONUCLIDE AIR EMISSIONS QUALITY ASSURANCE PROJECT PLAN (RAEQAPJP)	05/26/92	1	PALMER	FARMER	NONE
PL-FMPC-3009	WASTE MINIMIZATION & POLLUTION PREVENTION AWARENESS PLAN	04/30/91	0	ALLMON	DECHTER	FMPC-2205
PL-3010	FY-1992 ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT SITE SPECIFIC PLAN	09/10/91	0	MCDONALD	REED	NONE
PL-3015	FEMP EMERGENCY PLAN	11/27/91	0	CORNWELL	VOLPE	FMPC-2046

POLICIES AND PROCEDURES

DOCUMENT.NO.	TITLE	EFFECTIVE. DATE	REV. NO.	SME	DOC.OWNER	SUPERSEDES
FMPC-0101	WMCO MANAGEMENT PHILOSOPHY	01/12/90	1	DEN HERDER	DEN HERDER	NONE
FMPC-0102	TRAINING	01/16/91	1	POLUS	VOLPE	NONE
PP-0103	SITE DOCUMENT SYSTEM	08/28/91	0	TILNEY	DEN HERDER	IN-FMPC-6007
FMPC-0105	ACCESS OF PERSONNEL, VISITORS AND VEHICLES TO THE FMPC	12/16/88	1	MILLER	VOLPE	NONE
FMPC-0106	EMPLOYMENT AND INDOCTRINATION OF NEW PERSONNEL	04/04/88	0	CRISLER	CRISLER	NONE
FMPC-0110	DRUG-FREE WORKPLACE/SUBSTANCE ABUSE	08/18/89	1	CRISLER	CRISLER	NONE
FMPC-0113	WORKERS' COMPENSATION CLAIMS	12/16/88	0	CRISLER	CRISLER	NONE
FMPC-0121	SEXUAL HARASSMENT	11/21/89	2	CRISLER	CRISLER	NONE
FMPC-0122	OPEN COMMUNICATION OF EMPLOYEE CONCERNS	02/26/90	1	CRISLER	CRISLER	NONE
PP-FMPC-0123	SMOKING RESTRICTIONS AND CONTROL	03/28/91	0	SASKOWSKY	CRISLER	FMPC-0123
FMPC-0124	EQUAL EMPLOYMENT OPPORTUNITY	04/23/90	2	CRISLER	CRISLER	NONE
PP-0125	EMERGENCY MANAGEMENT	09/06/91	0	CORNWELL	VOLPE	FMPC-0125
FMPC-0126	EMPLOYEE ASSISTANCE PROGRAM	12/11/89	0	CRISLER	CRISLER	NONE
FMPC-0302	REQUEST FOR PURCHASE	01/06/92	3	REED	REED	NONE
FMPC-0303	MANAGEMENT OF GOVERNMENT PROPERTY	02/15/89	0	REED	REED	NONE
FMPC-0304	HANDLING OF CONTROLLED SUBSTANCES AND SELECTED CHEMICALS	10/19/88	0	CRISLER	CRISLER	NONE
FMPC-0306	CONTRACT ADMINISTRATION	02/01/88	0	REED	REED	NONE
FMPC-0307	CONTROL AND ACCOUNTABILITY OF NUCLEAR MATERIALS	12/19/91	4	REED	REED	NONE
PP-0309	MANAGEMENT OF WEMCO SITE PRECIOUS METALS	05/19/92	0	TAYLOR	REED	FMPC-0309
PP-0310	PERSONAL COMPUTER PROCUREMENT	09/12/91	0	GIBSON	REED	NONE
PP-0314	PACKAGING, ON-SITE MOVEMENT AND OFF-SITE SHIPMENT OF MATERIAL	12/20/91	0	MCGROGAN	DECHTER	FMPC-0314
FMPC-0315	CONTROL OF PURCHASED SUPPLIES AND SERVICES	07/10/89	1	REED	REED	NONE
FMPC-0316	8 (A) VENDOR PROGRAM	06/04/90	2	REED	REED	NONE
FMPC-0317	TECHNICAL EVALUATION OF A PROPOSAL	03/24/88	0	REED	REED	NONE
FMPC-0319	MATERIAL COMPATIBILITY PRACTICES	01/26/90	0	FLEMING	VOLPE	NONE
FMPC-0402	FOREIGN TRAVEL	07/26/90	0	REED	REED	NONE
PP-0408	TRAVEL AND SEMINAR AUTHORIZATION AND REPORTING	02/03/92	0	CALDWELL	REED	IN-6037
FMPC-0412	MANAGEMENT CONTROL SYSTEM POLICY	12/02/88	0	REED	REED	NONE
FMPC-0503	FMPC SPILL INCIDENT REPORTING AND CLEANUP	10/25/88	0	SAVAGE	SAVAGE	NONE
FMPC-0505	RADIATION CONTROL	12/02/88	0	VOLPE	VOLPE	NONE
FMPC-0508	SAFETY ANALYSIS DOCUMENTATION PROGRAM	10/31/88	1	CLICK	BOGAR	NONE
FMPC-0511	CONTROL OF ENTRY TO THE WASTE STORAGE AREA	08/24/90	1	DECHTER	DECHTER	NONE

POLICIES AND PROCEDURES

DOCUMENT.NO.	TITLE	EFFECTIVE. DATE	REV. NO.	SME	DOC.OWNER	SUPERSEDES
FMPC-0512	CONFIGURATION CONTROL OF SAFETY SYSTEMS, DESIGN FEATURES FOR SAFETY, AND OSR-AFFECTED PROCEDURES	10/31/88	0	CLICK	BOGAR	NONE
FMPC-0516	CONTROL OF PERMITS FOR ACCOMPLISHING HAZARDOUS WORK	04/23/91	2	FLEMING	VOLPE	NONE
FMPC-0517	NUCLEAR CRITICALITY SAFETY	05/01/89	0	CLICK	BOGAR	NONE
PP-0518	NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) PROGRAM	10/01/91	0	RATHGENS	FARMER	FMPC-0518
FMPC-0519	MANAGEMENT OF HAZARDOUS WASTE	07/28/89	0	COYLE	FARMER	NONE
PP-0602	CENTRALIZED COMMITMENT CONTROL	08/28/91	0	GESSENDORF	DEN HERDER	FMPC-0602
FMPC-0603	REQUESTING INFORMATION SYSTEMS SERVICES	11/21/89	0	REED	REED	NONE
FMPC-0604	PROTECTION OF SENSITIVE UNCLASSIFIED INFORMATION	10/15/87	0	REED	REED	NONE
FMPC-0605	DOE DIRECTIVES ADMINISTRATION	11/30/89	1	AMAN	DEN HERDER	NONE
FMPC-0608	PREPARATION AND RELEASE OF TECHNICAL INFORMATION	03/08/90	3	NEYER	FARMER	NONE
FMPC-0609	RECORDS MANAGEMENT	09/26/90	1	MOHR	MOHR	NONE
PP-FMPC-0610	PATENT AND INVENTION DISCLOSURE	07/31/91	0	CHEN	BOGAR	NONE
FMPC-0611	CONTROL OF FORMS	02/07/90	1	MOHR	MOHR	NONE
FMPC-0612	WMCO PERSONNEL CONTACTS WITH REGULATORY AGENCIES	01/13/89	1	SAVAGE	SAVAGE	NONE
FMPC-0614	UNCLASSIFIED COMPUTER SECURITY PROGRAM	04/23/90	0	REED	REED	NONE
FMPC-0702	DEVELOPMENT AND CONTROL OF DESIGN	03/05/90	1	SIMI	SOLOMON	NONE
FMPC-0704	MINOR EVENT REPORTING SYSTEM	08/24/89	2	DECHTER	DECHTER	NONE
FMPC-0705	OPERATIONAL READINESS PROCESS	01/21/92	3	DECHTER	DECHTER	NONE
FMPC-0707	AUDIT PROGRAM	10/27/89	1	WEISSENBERG	SAVAGE	NONE
FMPC-0708	PERSONNEL CERTIFICATION	12/15/89	2	HOFFMAN	VOLPE	NONE
PP-0709	CONDUCT OF INDEPENDENT SURVEILLANCE ACTIVITY	12/31/91	0	MERRIMAN	SAVAGE	FMPC-0709
PP-0710	QUALITY ASSURANCE PLANS	11/14/91	0	MERRIMAN	SAVAGE	IN-6012
FMPC-0711	QUALITY LEVELS	12/15/89	1	SAVAGE	SAVAGE	NONE
PO-0712	RISK ASSESSMENT AND MANAGEMENT (RAM) SYSTEM POLICY	01/25/92	0	WERNER	BOGAR	IN-6034
FMPC-0715	FMPC WORK REQUEST SYSTEM	03/02/89	0	DECHTER	DECHTER	NONE
FMPC-0716	CONTROL OF PROCESSES	06/20/90	1	DECHTER	DECHTER	NONE
FMPC-0717	INSPECTION	12/15/89	2	SAVAGE	SAVAGE	NONE
FMPC-0718	MEASURING AND TEST EQUIPMENT CALIBRATION AND CONTROL	01/12/90	2	DECHTER	DECHTER	NONE
PP-FMPC-0719	ENERGY CONTROL (LOCKOUT AND TAGOUT)	02/15/91	0	MILLER	DECHTER	FMPC-0719
PP-0721	TEST AUTHORIZATION	04/06/92	0	VOYLES	SOLOMON	FMPC-0721
PP-0722	REQUESTING ENGINEERING SERVICES	11/06/91	0	SIMI	SOLOMON	FMPC-0722

POLICIES AND PROCEDURES

DOCUMENT.NO.	TITLE	EFFECTIVE. DATE	REV. NO.	SME	DOC.OWNER	SUPERSEDES
PO-FMPC-1001	CONDUCT OF OPERATIONS POLICY	08/24/90	0	DECHTER	DECHTER	NONE
PR-FMPC-4006	OCCURRENCE REPORTS	11/16/90	0	BOBACK	GRUMSKI	FMPC-0703
PP-FMPC-5003	CORRESPONDENCE DIRECTIVE	12/13/90	0	MCDONOUGH	MOHR	NONE
PP-FMPC-5004	RESPONSE TO PUBLIC INFORMATION REQUESTS	11/16/90	0	WALKER	MOHR	FMPC-0618
PP-FMPC-5007	TYPE A, B, AND C, INVESTIGATIONS	02/05/92	1	LEIST	VOLPE	NONE
PP-5009	BUSINESS MEETING/TRAINING ARRANGEMENTS AND EXPENDITURES	11/04/91	1	TAYLOR	REED	PP-5009
PP-FMPC-5010	MANAGEMENT OF LOW-LEVEL WASTE (LLW)	12/26/90	0	ALLMON	DECHTER	NONE
PP-FMPC-5012	MANAGEMENT OF TELECOMMUNICATIONS EQUIPMENT AND SERVICES	01/31/91	0	GIBSON	REED	NONE
PP-FMPC-5013	ACQUISITION OF AUTOMATED DATA PROCESSING EQUIPMENT, SOFTWARE, AND SERVICE	04/16/91	0	GIBSON	REED	NONE
PP-FMPC-5014	MANAGEMENT INSPECTION OF FACILITIES PROGRAM (MIFP)	03/26/91	0	LEIST	GRUMSKI	NONE
PP-FMPC-5019	ACTIVITY DATA SHEET (ADS) FUNDING CHANGE CONTROL	08/09/91	0	JOHNSON	DEN HERDER	IN-FMPC-6005
PP-5023	FIRE PROTECTION POLICY	09/20/91	0	STEMEN	VOLPE	NONE
PP-5025	MEMBERSHIPS IN TECHNICAL, PROFESSIONAL, BUSINESS, OR TRADE ORGANIZATIONS	10/08/91	0	CALDWELL	REED	NONE
PP-5030	CHANGE PROPOSAL PROCEDURE	10/29/91	0	ALDRICH	REED	NONE
PP-5031	NUCLEAR MATERIALS DISPOSITION ORDER MANAGEMENT SYSTEM	10/29/91	0	DUNAWAY	REED	IN-6009
PP-5034	COST REDUCTION PROGRAM	03/16/92	0	GRUMSKI	GRUMSKI	IN-6011
PP-6003	OFFICE MACHINE ACQUISITION CONTROL	10/11/91	0	VIOX	REED	IN-FMPC-6003

SITE STANDARD OPERATING PROCEDURES

DOCUMENT.NO.	TITLE	EFFECTIVE DATE	REV. NO.	SME	DOC.OWNER	SUPERSEDES
ED-0001	EVENT NOTIFICATION AND REPORTING	02/14/92	0	MCCLANE	VOLPE	OM-FMPC-0001
SSOP-0002	COMPLETING THE MATERIAL EVALUATION FORM	10/22/91	3	HAMBLIN	DECHTER	NONE
SSOP-0003	RECEIVING, ON-SITE MOVEMENT AND OFF-SITE SHIPMENT OF NON-RADIOACTIVE HAZARDOUS MATERIAL	04/30/92	1	STAPLETON	DECHTER	NONE
SSOP-0005	CLEARANCE DOCUMENT PREPARATION FOR ACQUISITION PLAN CHANGE	04/16/91	0	GIBSON	REED	NONE
SSOP-0006	PREPARING AN ACQUISITION PLAN FOR COMPUTER-RELATED PURCHASES	04/16/91	0	GIBSON	REED	NONE
SSOP-0007	OBTAINING SIGNATURE AUTHORIZATION FOR THE APPROVAL OF DISBURSEMENTS	04/16/91	0	TAYLOR	REED	NONE
SSOP-0008	PREPARING AND TRANSFERRING UNCHARACTERIZED WASTE TO THE CONTROLLED HOLDING AREA	01/13/92	1	OGG	DECHTER	NONE
SSOP-0011	QUALIFICATION OF HEPA FILTER TEST PERSONNEL	08/28/91	0	PALMER	DECHTER	NONE
SSOP-0013	DOCUMENTATION OF EXCEPTION TO TRAINING	09/20/91	0	WERNER	VOLPE	NONE
SSOP-0014	DOCUMENTATION OF A SUBJECT MATTER EXPERT (SME)	06/03/91	0	WERNER	VOLPE	NONE
SSOP-0016	ACCESS & EXIT REQUIREMENTS FOR VEHICLES USED IN CONTROLLED AREAS	09/16/91	0	CALHOUN	VOLPE	NONE
SSOP-0018	PROCESSING THE SITE-WIDE ANALYSIS REQUEST/CUSTODY RECORD FOR SAMPLE CONTROL	05/07/92	1	MADARIS	DECHTER	NONE
SSOP-0022	QUALIFICATION PROGRAM TRAINING COMPLETION DOCUMENTATION	01/24/92	0	PLACE	VOLPE	NONE
SSOP-0023	DEVIATION AND CORRECTIVE ACTION REPORTING	02/04/92	1	MALONE	SAVAGE	NONE
SSOP-0024	PACKAGING LOW LEVEL RADIOACTIVE WASTE (LLRW) FOR OFF-SITE DISPOSAL	10/14/91	0	DUNBAR	DECHTER	20-C-601
SSOP-0027	CONTROL OF BOX-TYPE CONTAINERS	02/07/92	0	DUNBAR	DECHTER	NONE
SSOP-0028	CONTROLLING PORTABLE VENTILATION DEVICES AND VACUUM CLEANERS	12/20/91	0	GRIFFITH	DECHTER	NONE
SSOP-0030	ACQUISITION OF PERSONAL COMPUTERS, PERIPHERAL EQUIPMENT AND SOFTWARE	09/12/91	0	GIBSON	REED	FMPC-0310
SSOP-0031	NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DOCUMENT PROCESS	10/01/91	0	RATHGENS	FARMER	NONE
SSOP-0034	NUCLEAR MATERIALS DISPOSITION ORDER MANAGEMENT	10/29/91	0	KAUSHIVA	DEN HERDER	IN-6010
SSOP-0036	QUALITY ASSURANCE PROJECT PLANS	11/14/91	0	MERRIMAN	SAVAGE	IN-6014
SSOP-0041	PREVENTING URANIUM LOSSES THROUGH THE STORM SEWER TO THE ENVIRONMENT (RESPONDING TO PH ALARMS)	04/21/92	0	GLASSMEYER	DECHTER	2-C-914
SSOP-0059	CONTROL AND TRACKING OF CHEMICAL SUBSTANCES	05/26/92	0	OGG	DEN HERDER	NONE

SITE STANDARD OPERATING PROCEDURES

DOCUMENT.NO.	TITLE	EFFECTIVE DATE	REV. NO.	SME	DOC.OWNER	SUPERSEDES
SSOP-0060	PACKAGING RADIOACTIVE MATERIAL FOR OFFSITE SHIPMENT	04/10/92	0	OGG	DEN HERDER	NONE
TR-SP-6001	REQUESTING TRAINING FOR AN ACTIVITY	05/26/92	0	HOFFMAN	VOLPE	NONE

SECTION 3

SITE DOCUMENT CHANGES (SDC)

SITE DOCUMENT CHANGES

SDC NO.	AFFECTED DOCUMENT	AFFECTED DOCUMENT TITLE	EFFECTIVE DATE	EXPIRATION DATE	SME	DOC.OWNER
SC92-005	SSOP-0024	PACKAGING LOW LEVEL RADIOACTIVE WASTE FOR OFFSITE DISPOSAL	04/29/92	10/29/92	HUNDLEY	DECHTER
SC92-006	SSOP-0024	PACKAGING LOW LEVEL RADIOACTIVE WASTE FOR OFFSITE DISPOSAL	04/29/92	10/29/92	HUNDLEY	DECHTER
SC92-007	SSOP-0024	PACKAGING LOW LEVEL RADIOACTIVE WASTE FOR OFFSITE DISPOSAL -	04/29/92	10/29/92	HUNDLEY	DECHTER
SC92-008	SSOP-0024	PACKAGING LOW LEVEL RADIOACTIVE WASTE FOR OFFSITE DISPOSAL	04/29/92	10/29/92	HUNDLEY	DECHTER
SC92-014	FMPC-2194	SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN	05/14/92	11/16/92	MERCADAL	FARMER
SC92-015	FMPC-0302	REQUEST FOR PURCHASE	04/30/92	10/30/92	REED	REED
SC92-016	FMPC-0302	REQUEST FOR PURCHASE	04/30/92	10/30/92	REED	REED
SC92-017	FMPC-0302	REQUEST FOR PURCHASE	04/30/92	10/30/92	REED	REED
SC92-018	FMPC-0302	REQUEST FOR PURCHASE	04/30/92	10/30/92	REED	REED
SC92-019	FMPC-0302	REQUEST FOR PURCHASE	04/30/92	10/30/92	REED	REED
SC92-020	PR-FMPC-4006	OCCURRENCE REPORTS	05/14/92	11/16/92	BOBACK	GRUMSKI
SC92-021	PR-FMPC-4006	OCCURRENCE REPORTS	05/14/92	11/16/92	BOBACK	GRUMSKI
SC92-022	PR-FMPC-4006	OCCURRENCE REPORTS	05/14/92	11/16/92	BOBACK	GRUMSKI

WESTINGHOUSE MATERIALS COMPANY OF OHIO SITE DOCUMENT PROGRAM		SITE STANDARD OPERATING PROCEDURE Page 1 of 21
Title: DEVIATION AND CORRECTIVE ACTION REPORTING		DOCUMENT NO: SSOP-0023 REVISION NO. 0
Authorization: (SOF) W. H. Britton, President	Supersedes: None	Issue Date: 06-27-91

1.0 POLICY

Westinghouse Materials Company of Ohio (WMCO) shall document, disposition and, where appropriate, identify root cause and take action to prevent the recurrence of deviations discovered in materials, processes and related documentation at the Site or at supplier facilities.

2.0 SCOPE

This procedure identifies the assigned responsibilities and required actions for identifying, documenting, evaluating and providing dispositions and corrective action plans for deviations and corrective actions observed during audits, reviews, surveillances, inspections or tests performed at the Site both internal and external organizations, as well as the evaluation of supplier-proposed dispositions and corrective actions plans.

3.0 DEFINITIONS

3.1 Condition Adverse to Quality (CAQ) - An all-inclusive term used in reference to any of the following: failures, malfunctions, deficiencies, defective items, violation of regulatory requirement or nonconformances.

3.2 Corrective Action - Measures taken to rectify significant conditions adverse to quality or violation of regulatory requirement and, where necessary, to preclude repetition.

3.3 Corrective Action Report (CAR) - A form used to document the corrective action process for significant conditions adverse to quality or violation of regulatory requirements discovered during audits, reviews, surveillances, inspections or tests performed by both internal and external organizations. This form can be either the CAR form shown in Attachment D or a computer generated form which contains the same information.

3.4 Deviation - As used in this procedure, "deviation" means a departure from a specified requirement discovered during an audit, review, surveillance, inspection or test. A deviation can be a condition in which characteristics of an item or service do not conform to prescribed limits; a required document is not available or is inadequate; a regulatory requirement was violated; or a procedure does not yield the desired results. These conditions can occur at any point in the fabrication, handling, shipment, storage, installation, operation of an item; the performance of a service; or the execution of quality assurance activities.

3.0 DEFINITIONS (cont.)

3.5 Deviation Report (DR) - A form used to document deviations, their disposition, verification and closure. This form can be either the DR form shown in Attachment A or a computer generated form which contains the same information.

3.6 Disposition - The action necessary to correct or resolve a specific deviation. Disposition involves the following:

3.6.1 Accept-as-is - item is acceptable for use when supported with technical justification.

3.6.2 Rework - item is processed further to conform to specified requirements.

3.6.3 Repair - item is processed to become acceptable for use but does not conform to specified requirements.

3.6.4 Reject - a decision that a nonconforming item cannot be accepted-as-is, reworked, or repaired. Rejected items shall be scrapped, identified and altered so as to be inapplicable for their original use, or returned to the supplier, as appropriate.

3.6.5 Other - describe in space provided on DR form the specific actions taken or to be taken such as revise procedure, develop procedure, provide training, etc.

3.7 External Corrective Action Report (XCAR) - A term used to signify the Corrective Action Report Form used to document findings discovered during external reviews by organizations other than WMCO and the corrective action process for addressing the findings.

3.8 Requisitioner - The individual who authorizes and/or initiates a purchase request.

3.9 Root Cause - The most basic reason for an effect, which, if corrected, will prevent recurrence of that effect. The correction must be achievable by WMCO and it cannot interfere with WMCO's goals and objectives. Most negative effects of interest will have a root cause that falls into one of three categories: Personnel Error, Procedural Error, or Equipment Failure.

3.10 Senior Management - Management reporting directly to the President of WMCO.

3.0 DEFINITIONS (cont.)

3.11 Significant Condition Adverse to Quality (SCAQ) - A condition which, if uncorrected, could have a impact on safety of employees and general public or operability, or violate a regulatory requirement.

4.0 RESPONSIBILITIES

4.1 WMCO Personnel/Preparer - Every WMCO employee is responsible for notifying Environmental Compliance/Quality Assurance of potential deviations by completing sections 1 and 2, as appropriate, of the Deviation Report (DR) form Attachment A.

4.2 Environmental Compliance and Quality Assurance - Is responsible for the following actions associated with deviations from reviews, surveillances, inspections and tests conducted at the Site and supplier facilities:

4.2.1 Identifying, documenting, issuing and requesting disposition of deviations on a DR form. Also assures clear description of deviation is provided.

4.2.2 Evaluating deviations and requesting root cause determination and corrective action where warranted.

4.2.3 Evaluating proposed disposition, root cause and corrective actions.

4.2.4 Verifying disposition/corrective actions are complete and acceptable, and closes DRs and CARs.

4.2.5 Retaining official records and files related to the documentation of deviations and their disposition and/or corrective action.

4.2.6 Tracking of the status of deviations.

4.3 Performance Assessment and Communications - Is responsible for the following actions associated with deviations from QA Program audits, trend analysis programs and external review findings:

4.3.1 Identifying, documenting, issuing and requesting disposition of deviations on a CAR form. Also assures clear description of deviation is provided.

4.3.2 Evaluating deviations and requesting root cause determination and corrective action where warranted.

4.0 RESPONSIBILITIES (cont.)

4.3.3 Evaluating proposed disposition, root cause and corrective actions.

4.3.4 Conducting actions to verify disposition/corrective actions are complete and acceptable.

4.3.5 Issuing final closure upon verification of corrective action.

4.3.6 Performing trend analysis of deviations.

4.3.7 Retaining official records and files related to the documentation of deviations and their disposition and/or corrective action.

4.3.8 Tracking of the status of deviations.

4.4 Senior Management/Activity Manager/Cognizant Engineer - Evaluates and determines root cause for the deviation. Proposes and accomplishes disposition/corrective actions. Approves Supplier Disposition Requests.

4.5 Procurement - Coordinates Supplier Disposition Requests for disposition/corrective action approval.

4.6 Evaluator - A person from Environmental Compliance and Quality Assurance or Performance Assessment and Communications, who is responsible to perform the following steps in processing a DR or CAR:

4.6.1 Determine whether a DR or CAR will be issued.

4.6.2 Accept the proposed disposition, root cause and corrective action.

4.6.3 Perform verification of disposition or corrective action.

4.6.4 Closeout the DR or CAR.

5.0 GENERAL

5.1 Deviations may or may not adversely affect the quality of the item or service involved, depending on the severity of the condition. Those deviations determined to be significant conditions adverse to quality require corrective action in accordance with this procedure. Deviations shall be evaluated for root cause determinations.

5.0 GENERAL (cont.)

5.2 Repetitive non-significant deviations of the same kind noted over a short period of time require corrective action in accordance with the requirements of this procedure.

5.3 A trend analysis of DRs, CARs and XCARs is performed by Performance Assessment to identify chronic problem areas. Results of this trend analysis are reported to responsible management, who review the data to determine root causes and develop corrective action(s) to prevent recurrence.

6.0 PROCEDURE

6.1 Deviation Reports

WMCO PERSONNEL/PREPARER

6.1.1 Identify and document potential deviations, as outlined in Attachment A, in Sections 1 and 2 of the Deviation Report (DR) form.

6.1.2 Verbally notify the responsible management of the potential deviation the same day it was discovered.

6.1.3 Sign and date the Prepared By block in section 2.

6.1.4 Forward the DR to Environmental Compliance/Quality Assurance for evaluation.

EVALUATOR

6.1.5 Evaluate the potential deviation for actual violation of requirements/specifications and assures clear description of deviation is provided. If an actual DR is not required notify preparer a DR is not required. If a DR is required proceed with step 6.1.6.

6.1.6 Obtain and enter a DR number from the computer DR data base or from the Administrator, Deviation and Corrective Action Control on the DR form . The unique number is composed of the current year and a three digit number (Example 89-001)

6.0 PROCEDURE (cont.)

6.1.7 When a nonconforming item (hardware or material) is discovered, ensure that a Quality Nonconformance Tag, Form FMPC-QA-2708 (Attachment B) is attached to it, where practical. If not practical to affix Nonconformance Tag, ensure other precautions are taken to preclude inadvertent use or further processing.

NOTE: Quality Nonconformance Tags shall be removed only after completion of the disposition action identified on the DR by the evaluator.

6.1.8 Evaluate deviations for Significant Conditions Adverse to Quality (SCAQ). See Attachment C for criteria and examples for determining the need for a Corrective Action Report. For those deviations determined to be SCAQ complete a Corrective Action Report in accordance with 6.2, if DR is no longer required close it out based upon the issue of a CAR.

6.1.9 Request disposition from the activity manager/cognizant engineer of the organization responsible for item or activity in which the deviation was discovered.

NOTE: When a deviation is identified at receiving inspection, the disposition shall be determined by the requisitioner/cognizant engineer.

ACTIVITY MANAGERS/COGNIZANT ENGINEER

6.1.10 Segregate hardware items in designated hold areas or implement other precautions to preclude inadvertent use, as appropriate.

6.1.11 Evaluate deviations for reportability under the occurrence reporting system. See PR-FMPC-4006, Occurrence Reports (OR). If an Occurrence Report is required, enter this as the proposed disposition and the DR will be closed out based upon the issue of an OR.

6.1.12 Enter the proposed disposition by checking the appropriate block in Section 3 of the DR. For non-hardware deviations check the "Other" block and enter the disposition in the space provided. Include the scheduled completion date for dispositioning action.

6.0 PROCEDURE (cont.)

6.1.13 Provide a technical justification for items which are dispositioned "Accept-As-Is" or "Repair". This justification must identify specific engineering calculations or higher tier documents which provide evidence that the item will function reliably and safely even though it does not conform to the original requirement. An unsupported belief, opinion, or recommendation is not an acceptable technical justification.

NOTE: When "accept-as-is" or "repair" are used for the disposition, configuration control records shall be updated to reflect changes.

6.1.14 Return the disposition for the DR to the Evaluator within the requested time frame.

EVALUATOR

6.1.15 Evaluate proposed disposition action(s) and notify the activity manager/cognizant engineer of the responsible organization of the results by signing the "Evaluation of Disposition" section of the DR form.

6.1.16 Obtain customer approval of proposed dispositions for deviations associated with accountability of nuclear materials and for products that do not conform to customer specification requirements.

ACTIVITY MANAGERS/COGNIZANT ENGINEER

6.1.17 Accomplish disposition action(s) as scheduled.

6.1.18 Notify the evaluator when disposition action(s) is completed by signing the "Verification of Disposition Action Completion" section of the DR form.

EVALUATOR

6.1.19 Monitor accomplishment of disposition action(s) and verify completeness and acceptability.

6.1.20 Close DR and notify the activity manager/cognizant engineer, of the organization responsible for disposition action, of closure.

6.1.21 Ensure Nonconformance tags are removed and release any hardware items involved from hold status.

6.0 PROCEDURE (cont.)

6.2 Corrective Action Reports

EVALUATOR

6.2.1 Evaluate deviations for Significant Conditions Adverse to Quality (SCAQ). See Attachment C for criteria and examples for determining the need for a Corrective Action Report (CAR).

6.2.2 Evaluate the need to issue the CAR to Senior Management in accordance with Attachment C. If a CAR is required obtain a CAR number from the computer CAR data base or from the Administrator, Deviation and Corrective Action Control. The unique number is composed of the current year and a three digit number (Example 89-001)

6.2.3 Verbally notify the responsible management the same day as identified.

6.2.4 Identify and document the request for corrective actions, as outlined in Attachment D, in sections 1 and 2 of the CAR form.

6.2.5 Obtain the concurrence of the Evaluator's manager.

6.2.6 Issue the Corrective Action Report to the senior management/activity manager of the organization responsible for the deviation.

ACTIVITY MANAGER

6.2.7 Evaluate deviations for reportability under the occurrences reporting system. See PR-FMPC-4006, Occurrence Report (OR).

6.2.8 Determine the underlying (root) cause of the problem and document it in Section 3A of the CAR form.

6.2.9 If necessary, perform an investigation to determine if any similar work is affected by the problem and, if so, identify the action taken/proposed and the schedule to correct it in Section 3B of the CAR form.

6.2.10 Describe the action taken/proposed to correct the root cause and to prevent recurrence of the problem in Section 3C of the DCAR form. Enter the scheduled completion date for corrective action in Section 3D.

6.0 PROCEDURE (cont.)

6.2.11 Provide response to the CAR to the Evaluator within the time frame requested.

EVALUATOR

6.2.12 Evaluate proposed corrective action(s), obtain the evaluating manager's approval, sign block 4 of CAR form and notify the activity manager of the responsible organization of the results.

ACTIVITY MANAGERS

6.2.13 Accomplish corrective action(s) as scheduled.

6.2.14 Notify the evaluator when corrective action(s) is completed.

EVALUATOR

6.2.15 Monitor accomplishment of corrective action(s) and verify completeness and acceptability.

6.2.16 Close CAR, by signing block 5 of the CAR form, and notify the activity manager of the organization responsible for disposition action of closure.

6.3 External Corrective Action Reports (XCARs)

PERFORMANCE ASSESSMENT

6.3.1 Receive external findings from external organization (such as Tiger Teams, Technical Safety Appraisal, Westinghouse Corporate, etc.).

6.3.2 Obtain and enter an XCAR number from the computer XCAR data base or from the Administrator, External Corrective Action Control on the CAR form. Enter the XCAR data into the Commitment System. The unique number is composed of an X, the current year and a three digit number (Example X89-001).

6.3.3 Process the finding in accordance with 6.2 except the use of an XCAR number instead of a CAR number.

6.0 PROCEDURE (cont.)

6.4 Responding to Supplier Request for Disposition/Corrective Action Approval

BUYER

6.4.1 Receive Supplier Disposition Requests (SDR), Attachment E, with proposed dispositions.

6.4.2 Forward the SDR with proposed disposition to requisitioning department and a copy to Environmental Compliance and Quality Assurance for review and concurrence.

REQUISITIONER

6.4.3 Evaluate the supplier's proposed disposition, obtain concurrence from Environmental Compliance and Quality Assurance concerning its acceptability and if appropriate, approve the disposition action in an approval memorandum.

NOTE: If disposition action is unacceptable, the Requisitioner initiates correspondence through the Buyer back to the supplier until resolution is reached.

REQUISITIONER

6.4.4 Forward the approval memorandum and supporting documentation to the Buyer.

BUYER

6.4.5 Issue disposition approval memorandum to supplier.

6.4.6 File a copy of disposition approval memorandum, completed SDR and supporting documentation in the purchase order file.

6.5 Trend Analysis

PERFORMANCE ASSESSMENT AND COMMUNICATIONS

6.5.1 Maintain a trend analysis program for the Deviation Reports, Corrective Action Reports and External Corrective Action Reports.

6.0 PROCEDURE (cont.)

6.6 Tracking of Deviations

ENVIRONMENTAL COMPLIANCE AND QUALITY ASSURANCE

6.6.1 Maintain a computer tracking/history system on open and closed Deviation Reports and Corrective Action Reports.

PERFORMANCE ASSESSMENT AND COMMUNICATIONS

6.6.2 Maintain a computer tracking/history system on open and closed External Corrective Action Reports.

6.7 Records

ENVIRONMENTAL COMPLIANCE AND QUALITY ASSURANCE

6.7.1 Maintain completed Deviation Reports and Corrective Action Reports as Quality Records.

PERFORMANCE ASSESSMENT AND COMMUNICATIONS

6.7.2 Maintain completed External Corrective Action Reports as Quality Records.

7.0 APPLICABLE DOCUMENTS

7.1 PR-FMPC-4006, Occurrence Reports (OR)

8.0 APPLICABLE FORMS

8.1 Form FMPC-EC&QA-2909 Deviation Report (DR)

8.2 Form FMPC-Q-2708, Quality Nonconformance Tag

8.3 Form FMPC-EC&QA-2909-1, Corrective Action Report (CAR)

8.4 Form FMPC-QA-2642, Supplier Disposition Request

9.0 ATTACHMENTS

9.1 Attachment A - Deviation Report (DR).

9.2 Attachment B - Quality Nonconformance Tag.

9.3 Attachment C - Criteria for Determining If a Corrective Action Report Is Required - Criteria for Determining If a Corrective Action Report Is Required To Be Issued To Senior Management

9.4 Attachment D - Corrective Action Report Form (CAR)

9.5 Attachment E - Supplier Disposition Request (SDR)

DR NO.:	DEVIATION REPORT	REVISION:

1 Date of Discovery: _____ Responsible Organization: _____

Responsible Organization Representative: _____

Activity: _____ Location: _____

2 Requirements: _____

Deviation: _____

Verbally Notified Management: _____ (DATE) Prepared By: _____ Date: _____

Is Corrective Action Report Required? ☐ YES ☐ NO Provide Disposition by: _____

Evaluator: _____ Date: _____

3 Is Deviation Reportable Under OR? ☐ *Yes (UOR No. ____) ☐ No
*If yes, proceed in accordance with PR-FMPC-4006 and close this DR.

Disposition: ☐ Accept-As-Is ☐ Rework ☐ Repair ☐ Reject ☐ Other

Accept-As-Is/Repair Justification: _____

Scheduled Completion Date: _____

Responsible Organization's Representative: _____ Date: _____

4 Evaluation of Disposition:

Evaluator: _____ Date: _____

5 Verification of Disposition Action Completion:

Evaluator: _____ Date: _____

Preparer

Complete Section 1 and 2 as follows:

- Date of Discovery - Enter date the deviation was discovered.
- Responsible Organization - Enter the organization responsible for the item or activity in which a deviation is discovered.
- Responsible Organizations Representative - Enter name of the representative responsible for disposition/corrective action.
- Activity - Enter activity performed. (Example Audit 189-1)
- Location - Location of the activity. (Example Plant 6)
- Requirements - Identify the procedure, instruction, standard, or code which establishes the acceptance criteria for the activity or item being evaluated.
- Deviation - Fully describe the deviation as it relates to the requirements.
- Verbally Notified Management - List the date that the responsible organizations management was verbally notified of the potential deviation.
- Prepared By - The preparer signs and dates for Sections 2.

Evaluator

- Is Corrective Action Report Required - Evaluate deviation for issue of a Corrective Action Request. Check "Yes" if required or "No" if not required.
- DR No. - Obtain and enter on the DR Form a DR Number from the Computer DR Data Base or from the Administrator, Deviation Control and Corrective Action.
- Revision - Enter the current revision number 0, 1, etc.
- Provide Disposition By Date - Request the organization deemed responsible to provide dispositioning action by a certain date outlining steps taken or planned to correct immediate problem
- Evaluator - Sign & date Section 2 of the DR form.

Responsible Organization Representative

Completion of Disposition Action Section 3

- Is Deviation Reportable Under OR - Evaluate the deviation in accordance with PR-FMPC-4006 for Occurrence Reporting and check the appropriate block. If an OR is required sign off section as complete and forward back to Evaluator.
- Disposition - for DR's not reportable as an OR, check the appropriate block for Accept-as-is, Rework, Repair, Reject or Other and indicate the appropriate disposition in the space provi disposition to Accept-as-is or Repair provide a technical justification

Evaluator

Completion of the Receipt & Evaluation of Proposed Dispositions Section 4

- Receive and evaluate the proposed disposition to determine its adequacy for solving the specific problem identified in the deviation report, which includes verification that a decision has been by the Manager of the organization responsible, as to whether the deviation is reportable in accordance with PR-FMPC-4006 for Occurrence Report (OR). If the "Yes" box is checked, the resp organization proceeds with the reportability process in accordance with PR-FMPC-4006 and the DR can be closed based upon the issue of a OR.
- Document acceptance of the proposed disposition in Block 4 by signature and date.
- Notify the organization responsible for disposition action of the rejection of the proposed disposition action and coordinate with the organization to obtain a revised response.

Completion of the Verification and Closure of Disposition Action Section 5

- Monitor the disposition and verify that the actions taken to correct the deviation have been completed satisfactorily.
- Approve acceptance of verified disposition in Section 5 by signature and date.
- Ensure the removal of nonconforming item tag(s) only after verifying satisfactory completion of all dispositioning actions.
- Forward the closed out deviation report (DR) to the Administrator, Deviation Control and Corrective Action with a copy to responsible organization management.

WESTINGHOUSE MATERIALS COMPANY OF OHIO SITE DOCUMENT PROGRAM		SITE STANDARD OPERATING PROCEDURE Page 15 of 21
Title: DEVIATION AND CORRECTIVE ACTION REPORTING		DOCUMENT NO: SSOP-0023 REVISION NO. 0
Authorization: W. H. Britton, President	Supersedes: None	Issue Date: 06-27-91

Attachment B

QUALITY NONCONFORMANCE

P.O./SHIPMENT/LOT/PACKAGE/CONTAINER I.D. No _____

RECEIVING REPORT NO.: _____ INSPECTION REPORT NO. _____

DESCRIPTION OF NONCONFORMANCE: _____

_____

_____

NAME _____ BADGE No _____ PHONE No _____

TO BE REMOVED BY AUTHORIZED PERSONNEL ONLY

FMPC-O-2708 (REV 8-29-90)

Westinghouse Materials Company of Ohio

DCAR No.: _____

DATE: _____

QUALITY NONCONFORMANCE

TO BE REMOVED BY AUTHORIZED PERSONNEL ONLY

FMPC-O-2708 (REV 8-29-90)

TAG IS WHITE WITH RED LETTERS

Attachment C

CRITERIA FOR DETERMINING IF A CORRECTIVE ACTION REPORT IS REQUIRED

A Corrective Action Report shall be issued for deviations with:

- Significance - Deviations which have, or may have, serious effect on safety, health, operability, environment or reliability.
- Quantity/Frequency - Repetitive deviations or similar deviations resulting from activities or conditions which are common to the deviations.
- Ineffective Implementation of Dispositions - Deviations which have not been properly or promptly dispositioned or resolved and which if uncorrected could result in other deviations or significant conditions adverse to quality.

The following are examples of significant conditions adverse to quality and shall be processed in accordance with this procedure:

- Approved and released documents such as design documents, procurement documents, procedures, instructions, reports, and data found to contain significant errors or to be inadequate for their intended function.
- In-process checks that indicate process or test limits may be exceeded and may have serious effect on safety, operability, or reliability.
- Out-of-calibration standards or instruments used to verify process limits and may have serious effect on safety, operability, or reliability.
- Significant Adverse trend analysis results.

CRITERIA FOR DETERMINING IF A CORRECTIVE ACTION REPORT IS REQUIRED TO BE ISSUED TO SENIOR MANAGEMENT

An evaluation shall be performed of each CAR for issue to Senior Management. If the CAR meets the following criteria, it shall be issued to Senior Management:

a) Significant and repetitive trends in deviation documents, audit/surveillance findings, and other inspections for which corrective action measures have proven ineffective or inadequate.

b) Delinquent Corrective Action that cannot be resolved at a lower level of Management.

c) Significant conditions adverse to quality which require more than a routine evaluation, analysis and corrective action.

Attachment D
Page 1 of 2

CAR NO.:	CORRECTIVE ACTION REPORT	REVISION:

1 Date of Discovery: _____ Responsible Organization: _____
Responsible Organization Representative: _____
Activity: _____ Location: _____

2 Requirements: _____

Deviation: _____

Verbally Notified Management: _____ Evaluator: _____ Date: _____

Provide Disposition by: _____ Evaluating Manager: _____ Date: _____

3 Response to the Request for Corrective Action:

Is Deviation Reportable Under OR? ☐ *Yes (OR No. ____) ☐ No
*If yes, proceed in accordance with PR-FMPC-4006 and close this CAR.

A. Reason for the Deviation (Root Cause): _____

B. Action Taken/Proposed to Investigate and Correct Similar Work: _____

C. Action Taken to Prevent Recurrence: _____

D. Date(s) Action(s) will be Complete: _____

Responsible Organization's Representative: _____ Date: _____

4 Evaluation of Corrective Action Response:

Evaluator: _____ Date: _____

Evaluating Manager: _____ Date: _____

5 Verification of Corrective Action Completion:

Evaluator: _____ Date: _____

Attachment D
Page 2 of 2

Evaluator

Complete Section 1 and 2 as follows:

- Date of Discovery - Enter date that corrective action was discovered to be required.
- Responsible Organization - Enter the organization responsible for the item or activity in which a corrective action is required.
- Responsible Organizations Representative - Enter name of the representative responsible for corrective action.
- Activity - Enter activity performed. (Example Audit 89-1)
- Location - Location of the activity. (Example Plant 6)
- Requirements - Identify the procedure, instruction, standard, or code which establishes the acceptance criteria for the activity or item being evaluated.
- Deviation - Fully describe the deviation as it relates to the requirements.
- Verbally Notified Management - List the date that the responsible organizations management was verbally notified of the potential deviation.
- CAR No. - Obtain and enter on the CAR Form a CAR Number from the Computer CAR Data Base or from the Administrator, Deviation Control and Corrective Action.
- Revision - Enter the current revision number 0, 1, etc.
- Provide Disposition By Date - Request the organization deemed responsible to provide disposition action by a certain date outlining steps taken or planned to correct immediate problem.
- Evaluator - Sign & date Section 2 of the DR form.
- Evaluating Manager - Obtain the concurrence of the Evaluator's Manager.

Responsible Organization Representative

Completion of Disposition Action Section 3

- Evaluate deviations for reportability under the occurrence reporting system. See PR-FMPC-4006, Occurrence Reporting (OR).
- A. Reason for the Deviation (Root Cause) - Determine the underlying (root) cause of the problem and document it in Section 3A of the CAR form.
- B. Action Taken/Proposed to Investigate and Correct Similar Work - If necessary, perform an investigation to determine if any similar work is affected by the problem and, if so, identify the action taken/proposed and the schedule to correct it in Section 3B of the CAR form.
- C. Action Taken to Prevent Recurrence - Describe action taken/proposed to correct the root cause and to prevent recurrence of the problem in Section 3C of the CAR form.
- D. Date(s) Action(s) will be Complete - Enter the scheduled completion date for corrective action in Section 3D.

Evaluator

Completion of the Evaluation of Corrective Action Response Section 4

- Review and evaluate the proposed corrective action to determine its adequacy for solving the specific problem identified in the deviation report, which includes verification that a decision has been made, by the Manager of the organization responsible, as to whether the deviation is reportable in accordance with PR-FMPC-4006 for Occurrence Report (OR). If the "Yes" box is checked, the responsible organization proceeds with the reportability process in accordance with PR-FMPC-4006 and the CAR can be closed based upon the issue of a OR.
- Document acceptance of the proposed disposition in Block 4 by signature and date.
- Notify the organization responsible for disposition action of the rejection of the proposed disposition action and coordinate with the organization to obtain a revised response.

Completion of the Verification and Closure of Disposition Action Section 5

- Monitor the disposition and verify that the actions taken to correct the deviation have been completed satisfactorily.
- Approve acceptance of verified disposition in Section 5 by signature and date.
- Ensure the removal of nonconforming item tagout only after verifying satisfactory completion of all disposition actions.
- Forward the closed out corrective action report (CAR) to the Administrator, Deviation Control and Corrective Action with a copy to responsible organization management.

Attachment E
Page 1 of 2

Westinghouse Materials Company of Ohio

SDR SERIAL NUMBER

SUBCONTRACT NUMBER

SUPPLIER DISPOSITION REQUEST

TO BE COMPLETED BY SUPPLIER

1 Waiver ☐ (W)
Non Conformance ☐ (N)

Attn _____ SUBCONTRACT ADMINISTRATOR

2 FROM (SUPPLIER NAME & ADDRESS)

3 DRAWING NUMBER & REVISION

4 COMPONENT AND SERIAL NUMBER

5 PART NAME AND SERIAL NUMBER

6 DESCRIPTION OF SPECIFICATION OR DRAWING REQUIREMENT TO BE WAIVED, OR INTERPRETATION REQUIRED. (W)
OR DEFICIENT CONDITION (N)

7 SDR'S PREVIOUSLY ISSUED ON THIS PART

8 OTHER PARTS AFFECTED
☐ YES ☐ SDR NO _____ (W)
☐ NO ☐ Quantity _____ (N)

9 (A) SUPPLIER'S RECOMMENDED DISPOSITION (WAIVER) (B) JUSTIFICATION FOR WAIVER (W)
(A) SUPPLIER'S RECOMMENDED DISPOSITION (B) JUSTIFICATION (C) CORRECTIVE ACTION BEING TAKEN TO PREVENT RECURRENCE (N)

10 THIS DISPOSITION WOULD AFFECT
INTERCHANGEABILITY ☐ YES ☐ NO OPERATION ☐ YES ☐ NO REPAIR PARTS ☐ YES ☐ NO

11 LIST ATTACHMENTS

12 SIGNATURE OF SUPPLIER'S AUTHORIZED REPRESENTATIVE DATE

TO BE COMPLETED BY WMCO

13 BASELINE ENG'R. DOCUMENTS AFFECTED (ECR REQUIRED)
☐ YES ☐ NO ☐ MAJOR SCOPE CHANGE ☐ CLASS I CHANGE ☐ CLASS II CHANGE ECR NO. _____

14 DISPOSITION ACTION
APPROVED AS RECOMMENDED ☐ DISAPPROVED ☐ OR AS BELOW ☐

15 THIS REQUEST AFFECTS INSPECTION OR INSTALLATION AT SITE
☐ YES ☐ NO

16 SIGNATURES & APPROVALS

ENGINEERING APPROVAL DATE

QUALITY ASSURANCE DATE

SUBCONTRACT ADMINISTRATOR BUYER DATE Subcontract Consideration Required ☐ YES ☐ NO

DOE (AS REQUIRED) DATE

17 DISTRIBUTION

The supplier accepts full responsibility for the accuracy and completeness of the information above.
The issuance and acceptance of this request in no way limits or affects the warranty provisions of the order. This request shall not establish a precedent or obligation to accept similar conditions in the future.

INSTRUCTIONS FOR PREPARATION OF SUPPLIER DISPOSITION REQUEST

GENERAL

It shall be the responsibility of the Supplier to initiate an SDR (Form FMPC QA 2642) for each waiver or nonconforming condition and submit it to WMCO for approval prior to implementing the supplier's recommended disposition. Attach all supplemental sheets as necessary to provide detailed explanations for those factors that cannot be fully explained in the space provided on the SDR form. Reports and dispositions via telephone or TWX are not prohibited, however, the supplier is responsible to execute an SDR on ALL deviations from drawing, specifications, or contract requirements. Any work done before receipt of written approval of the recommended disposition shall be at supplier's risk. Items shall not be released for shipment before approval of the recommended disposition.

The supplier shall maintain an SDR log and record a sequential numerical identification number on each SDR submitted. The subcontract or purchase order number, and the serial number shall be entered on the top of each SDR submitted.

PROCEDURE

Supplier Responsibility

Box 1 — Record the name of the cognizant Subcontract Administrator and check Box W or Box N.
Box W (Waiver) shall be used to identify a design change which will produce a better or less expensive product or improve the delivery schedule but requires waiving one or more requirements of the procurement document.
Box W shall also be checked if a clarification of specified requirements is requested.
Box N (Nonconformance) shall be used to identify a deviation from procurement document requirements which has occurred unintentionally during fabrication.

Box 2 — Record the mailing address as stated on the purchase order.

Box 3 — Record the drawing number and revision for the affected parts.

Box 4 — Record name of article as described on purchase order including serial number if applicable.

Box 5 — Record name of the affected part as shown on the drawing recorded in block 3, including serial number if applicable.

Box 6 — (W) For waiver or clarification request: Describe the problem or question identifying specification section for which the waiver is requested.
(N) For nonconformance: Record the condition including specification section violated.
(Both) Include sufficient detail to allow complete evaluation. Describe in detail those conditions not characterized by numerical variable.

Box 7 — List by serial number all previous SDR's submitted on the material defined by the information in blocks 5 and 6.

Box 8 — Evaluate and record whether other parts are influenced by the condition in block 6.
(W) For waiver or clarification request: Enter number of associated SDR.
(N) For nonconformance: Record the quantity of parts which are part of the same lot having the same attributes as described in block 6 for which disposition has not been requested.

Box 9 — Record the recommended disposition, the justification for such disposition and the corrective action to be taken to prevent recurrence (if applicable).

Box 10 — Record what effect the recommended disposition would have on interchangeability, operation and repair parts insofar as the Supplier can determine. Attach supplemental sheets explaining in detail what the effects are if any of the blocks are checked "yes".

Box 12 — Signature and title of the Supplier's authorized representative.

Mail to the cognizant Subcontract Administrator.

WMCO Responsibility

Box 13 — Responsible WMCO Engineer shall indicate if Baseline Engineering Documents are affected. If an ECR is required, process and obtain required review and approvals prior to obtaining the required signatures in Box 16.

Box 14 — The WMCO Engineer shall record the disposition action after coordination with Quality and Procurement. Reason for disapproval shall be stated.

Box 15 — The WMCO Engineer shall check the appropriate box after coordination with Quality. The affected superintendent or manager shall be notified immediately.

Box 16 — The Representatives of Engineering, Quality, and Subcontracts will endorse the disposition by their signature.

Box 17 — Distribute copies of completed form to Supplier, Receiving Inspection and QA Records.

NOTE: *The Subcontract Administrator will record in the SDR log the date of transmittal of the disposition to the supplier.*

WESTINGHOUSE MATERIALS COMPANY OF OHIO SITE DOCUMENT PROGRAM		SITE STANDARD OPERATING PROCEDURE Page 21 of 21
Title: DEVIATION AND CORRECTIVE ACTION REPORTING		DOCUMENT NO: SSOP-0023 REVISION NO. 0
Authorization: W. H. Britton, President	Supersedes: None	Issue Date: 06-27-91

RECORD OF ISSUE/REVISIONS

DATE	REV. NO	DESCRIPTION AND AUTHORITY
06-27-91	0	Issued to identify the assigned responsibilities and required actions for identifying, documenting, and providing dispositions for deviations and corrective actions observed during audits, reviews, initiated by M. A. Malone per Request No. P91-220.

THORIUM OVERPACKING PROJECT

SPECIFIC HEALTH AND SAFETY PLAN

BUILDINGS 67, 68, AND THE MIDDLE BAY OF 64

(Revision 1)

Prepared by

J. G. ROWE

APPROVALS:

J. J. Voipe
Vice President, IRS&T

S. W. Coyle
Manager, Environmental Management

August 2, 1991

WESTINGHOUSE MATERIALS COMPANY OF OHIO

TABLE OF CONTENTS

1.0 HISTORY & DESCRIPTION OF BUILDINGS 64, 67 & 68 1
1.1 History 1
1.1.1 Thorium Metal 1
1.1.2 Thorium Oxide, Oxalate, and Hydroxide Streams 1
1.1.3 Miscellaneous Thorium Materials 1
1.1.4 Current Thorium Inventory 2
1.2 Thorium Warehouse Characterization 2
1.2.1 Building 64 2
1.2.2 Building 67 4
1.2.3 Building 68 4

2.0 WORK AREA DESCRIPTION, ORGANIZATION AND CONTROL 5
2.1 Work Area Description 5
2.2 Organization and Control 5

3.0 JOB ACTIVITIES/WORK PLAN 6
3.1 Objective 6

4.0 HAZARD RISK ASSESSMENT 6
4.1 Types of Hazards 6

5.0 STANDARD OPERATING PROCEDURES (SOPs) 10

6.0 EDUCATION AND TRAINING 11

7.0 MEDICAL SURVEILLANCE 12
7.1 Occupational Medicine Program 12
7.2 Individual Identification 12

8.0 MONITORING 13

9.0 LEVELS OF PROTECTION 14
9.1 Description of Protection 14
9.1.1 High Radiation Area 14
9.1.2 Contamination Control Area/ Airborne Radioactivity Area 14
9.1.3 Thorium Warehouses 14

10.0 SAFETY EQUIPMENT 17

11.0 DECONTAMINATION 17

12.0 CONTINGENCY PLANS 17
12.1 Spill Procedures 17
12.2 Incidents or Injuries 18
12.3 Pre-emergency Planning 18
12.4 Lines of Authority 18
12.5 Evacuation 19
12.6 Emergency Notification 19
12.7 Additional Information 19

13.0 AMENDMENTS 20

1.0 HISTORY & DESCRIPTION OF BUILDINGS 64, 67 & 68

1.1 History

1.1.1 Thorium Metal

The FMPC produced thorium metals during two production periods, in the early fifties and from the mid-sixties to the mid-seventies. Most of the metal from the early production period was sent to Hanford or Savannah River as metal rods to be used as target material for irradiation and subsequent recovery of fissionable materials. The bulk of the metal from the late production period was sent to Oak Ridge (Y-12) as derbies to be cut up and arc melted to form ingots.

During both production periods small quantities of materials were sent offsite to special projects or laboratories for testing or analysis. Many of these materials were returned to the FMPC following the test program. Similarly, some of the offspec and leftover materials were returned to the FMPC from the Oak Ridge and Hanford/Savannah River projects.

1.1.2 Thorium Oxide, Oxalate, and Hydroxide Streams

The FMPC produced thorium oxide for use in various projects. The majority of the materials were made for the Light Water Breeder Reactor (LWBR) program from the mid-sixties to the early seventies. The FMPC process precipitated thorium oxalate from a thorium nitrate solution. This thorium oxalate was sent to General Electric in Evendale, Ohio where the material was calcined to thorium oxide or thoria or to Bettis Labs in West Mifflin, PA where the material was used to produced clad target elements for the LWBR. The current inventory of these materials is offspec materials, byproducts or excess materials returned to the FMPC when the materials were no longer required for the offsite programs.

1.1.3 Miscellaneous Thorium Materials

The FMPC produced thorium materials for various DOE projects during both production periods. This material was recalled to the FMPC for storage.

1.1.4 Current Thorium Inventory

In the early seventies, the DOE recalled all thorium materials to the FMPC which currently serves as the DOE repository for thorium materials. Thorium materials currently inventoried at the FMPC can be grouped into four different source categories: excess FMPC products and byproducts, offsite laboratories (which received small quantities), manufacturing facilities (which received larger quantities) and offsite storage facilities.

1.2 Thorium Warehouse Characterization

The current thorium inventory is stored in five warehouses. This plan is for the overpacking of the containers in three of these warehouses (Figure 1, attached). Table 1 is a characteristic summary of the three warehouses covered by this plan and their contents.

1.2.1 Building 64

1.2.1.1 Description

Building 64 was erected between 1953 and 1954. The structure is a prefabricated (Butler Mfg. Co.) open frame steel construction covered with 24 gauge galvanized corrugated steel. The structure was erected on a 9 inch concrete pad. Building 64 provides approximately 16,000 square feet of storage space. This storage space is divided into three separate storage areas or bays. The north and middle bays each provide approximately 1,000 square feet of storage space. The south bay provides approximately 14,000 square feet of storage space.

1.2.1.2 Activities Conducted in Building 64

Building 64 was erected to provide storage for Plant 9 raw materials, in-process, and finished products. The material stored there included uranium metal, orange oxide, green salt and process equipment stored for decommissioning. Uranium metal is currently stored in the south bay of building 64. The north end of the south bay (approximately 3,400 square feet) was dedicated to the overpacking operation for the drums stored on the pad west of building 65. These overpacked containers of thorium are currently stored in the north bay of building 64. The middle bay is currently used to store 181 containers of thorium materials to be overpacked. These materials were received for storage at the FMPC over a twelve year period (12/1963 - 11/1975).

TABLE 1 WAREHOUSE CHARACTERISTICS

Warehouse/Size	Contents	Radiological Contents	Hazardous Materials/Wastes	
			Organics/ HSL Semivolatiles	HSL Inorganics
Building 64 (middle bay) 1,000 ft²	181 containers of thorium metals, oxides, and miscellaneous materials	Thorium-232 6 Ci Thorium 230 1 Ci Thorium 228 6 Ci	None suspected	Trace amounts
Building 67 4,000 ft²	6,027 containers of thorium oxides and miscellaneous materials	Thorium-232 16 Ci Thorium 230 3 Ci Thorium 228 16 Ci Uranium 233 0.2 Ci	None suspected	35 containers are suspect RCRA hazardous for reactivity, corrosivity, and EP toxic for lead and chrome 136 containers need further evaluation actions, 2 of these containers are potentially pyrophoric
Building 68 5,000 ft²	1,314 containers of thorium oxides and miscellaneous materials	Thorium-232 36 Ci Thorium-230 4 Ci Thorium-228 36 Ci Uranium-233 41 Ci	None suspected	Trace amounts 42 containers require further evaluation actions

1.2.2 Building 67

1.2.2.1 Description

Building 67 was erected between 1954 and 1955. This structure is a prefabricated (Butler type) steel construction covered with 24 gauge galvanized corrugated steel erected on a 6 inch concrete pad. There is approximately 4,000 square feet of storage space in this building. The 6,027 containers of thorium are stored in a variety of arrangements, palletized for the most part.

1.2.2.2 Activities Conducted in Building 67

Building 67 was originally erected to provide storage for Plant 1. Building 67 has been used to store thorium and thorium compounds since the early seventies.

1.2.3 Building 68

1.2.3.1 Description

Building 68 was erected between 1955 and 1956. This structure is a prefabricated (Butler type) steel construction erected on a 6 inch concrete pad covered with transite panels. There is approximately 5,000 square feet of storage space in this building. For the most part, the 1,370 containers of thorium are stacked three high with 4' X 8' X 1/2" sheets of plywood separating the layers of drums.

1.2.3.2 Activities Conducted in Building 68

Building 68 was originally erected to provide storage for the Pilot Plant. The majority of the inventory of thorium drums has been stored in building 68 since it was processed in the pilot plant. A row of triple stacked drums of Magnesium Fluoride on pallets has been placed in the building as a shield wall between the thorium drums and the northwest corner of the building. The shield wall is arranged in an "L" shape from the east side of the north roll-up door to the center of the building to the center of the west wall. The northwest corner of building 68 contains drums of RCRA hazardous waste and K-65 debris (contaminated clothing, etc.)

2.0 WORK AREA DESCRIPTION, ORGANIZATION AND CONTROL

2.1 Work Area Description

The work area will comprise of buildings 67, 68, the middle bay of 64 and an interim storage facility. The interim storage facility will be an existing facility or a temporary tension support structure to be erected on the pad west of building 65.

An overpacking area will be established just outside of each warehouse (Figures 2, 3, & 4, attached). This area will be large enough to accommodate two overpacking stations.

2.2 Organization and Control

Access to potentially high radiation areas, the thorium warehouses, interim storage facility and overpacking areas will be controlled by posting the areas with signs ("Radiation Work Permit (RWP) required for entry"). Entry into these areas will be controlled and limited to those employees trained to work on this project. Signs will be posted at all entrances to the work areas prohibiting entry of personnel without proper protective clothing and equipment. The supervisor will maintain a list of trained (approved) personnel and provide the list to the Radiological Safety Technicians to verify training before granting permission to enter the work area.

The overpacking area will be maintained as a work area during overpacking operations when thorium materials are present. Contamination will be controlled by posting the area and requiring equipment and personnel monitoring prior to exiting the area.

Rev Each warehouse will remain a high radiation area until all containers of thorium have been removed, the floor has been cleaned, and a radiological survey demonstrates activity below action levels.

2.3 ALARA Controls

The dose to workers shall be maintained As Low As Reasonably Achievable (ALARA) through the use of time, distance and Shielding. All workers are responsible for minimizing exposure to themselves and other's. This effort will be supported by Radiological Safety Technicians who will assist in using the above techniques.

The forecast exposure for this job is 28.7 man-rem based on exposure from the thorium overpacking project for the 212 drums on the pad west of building 65. The ALARA target for this project is to achieve a 10% reduction in actual exposure versus forecast exposure.

3.0 JOB ACTIVITIES/WORK PLAN

3.1 Objective

The objective of this project is to remove and overpack the thorium containers from the three warehouses (buildings 67, 68 and the middle bay of building 64), per SOP 20-C-600 and move them to the an interim storage facility, per SOP 20-C-101 and FMPC 2089. Prior to being overpacked, each individual container will be identified and weighed. An inventory of overpacked drums will be maintained by MC&A personnel. The MC&A personnel will assign each overpack (six-pack) a unique number. Six-packs will be moved to the interim storage facility only after a smear survey determines loose surface contamination on the outside of the six-pack to be less than 200 dpm/100 cm^2 Alpha and 1,000 dpm/100 cm^2 Beta/gamma. Six-pack overpacks will be tight packed (no aisle space) and stacked three or four high in the interim storage facility after Quality Assurance (QA) personnel certify the container.

The containers in the middle bay of building 64 will be overpacked first. All containers that require further RCRA actions are in buildings 67 and 68. Containers that require further RCRA actions will be transported to the middle bay of building 64, per FMPC 2089, until the determinations are complete. Thirty-five (35) containers in building 67 which have been declared RCRA will be moved to an approved RCRA storage warehouse, per FMPC 2089.

4.0 HAZARD RISK ASSESSMENT

4.1 Types of Hazards

The primary hazard, other than physical hazards associated with material handling, encountered in this project is radiological exposure. The most likely routes of entry are inhalation and ingestion. The engineering design and administrative controls discussed in section 2.0 and summarized in Table 2 will maintain hazards levels As Low As Reasonably Achievable (ALARA).

Table 3 presents an assessment of the anticipated hazards that may be encountered during this project.

Table 4 lists the hazards that are not unique to this project which are controlled by established procedures taught in general plant worker training or project specific training. This table includes the two containers in building 67 which are considered to be potentially pyrophoric (PP). These containers represent less than 1% of the total containers to be handled in this project. Once the PP containers are located they will be isolated and overpacked according to SOP 1-C-918 after all other thorium containers in building 67 have been overpacked. After they are overpacked under an argon blanket, the PP containers will be transported to building 64 and stored with the PP drums previously overpacked until final treatment and disposition is determined .

TABLE 2: Administrative and engineering controls.

	HAZARD				
	PHYSICAL	AIRBORNE RADIATION	AIRBORNE CHEMICAL	DIRECT RADIATION	DIRECT CHEMICAL
The supervisor maintains access control to the exclusion area. During idle periods, the personnel will retreat to the decontamination zone	*	*	*	*	*
Eating, drinking, and smoking are prohibited in the overpacking area	*	*	*	*	*
Shielded forklift will be used to retrieve containers from the warehouses		*	*	*	*
No containers will be opened during the overpacking operation, reducing airborne emissions		*	*		
Concrete shield walls will be installed on the outside of each warehouse to reduce direct penetrating radiation exposure to overpacking personnel				*	
Overpacking stations will be equipped with shield walls to protect the crane operator and the spotter from direct penetrating radiation from the containers being overpacked				*	

Table 3: Anticipated Hazards for the Overpacking Project

Contaminant/Hazard	Route of Entry	Exposure Limit[1]	Action Level	Assessment
Radiological Airborne				
Long-Lived	inhalation			
thorium 228		4x10 '' µCi/ml	4x10 '' µCi/ml	Airborne activity levels at 10% of Exposure Limit will require posting as "Airborne Radioactivity Area" posting.
thorium 230		3x10 '' µCi/ml	3x10 '' µCi/ml	
thorium 232		5x10 '' µCi/ml	5x10 '' µCi/ml	"Respirator Area" posting will be required if average activity levels exceed 25% of the Exposure Limit.
uranium 233		2x10 '' µCi/ml	2x10 '' µCi/ml	
Bld 64 Total Long-lived		9.4x10 '' µCi/ml	9.4x10 '' µCi/ml	Action levels for respiratory protection are not expected to be approached because containers are in good condition and will not be opened during the overpacking operation. Loose surface contamination exceeding 10,000 DPM/100cm² will require "wipe down" to maintain respiratory protection action levels below limits in Table 7.
Bld 67 Total Long-lived		9.4x10 '' µCi/ml	9.4x10 '' µCi/ml	
Bld 68 Total Long-lived		1.4x10 '' µCi/ml	1.4x10 '' µCi/ml	
Short-lived	inhalation			
Radon (Rn-222)		1/3 Working Level	.033 Working Lev.	
Thoron (Rn-220)		1 Working Level	.1 Working Level	
External exposure Whole body	penetrating	3 rem/year	150 mrem/wk	Radiation work permits will control exposure at or below the action levels to maintain exposure below the established limits. The highest penetrating dose rates in each of the warehouses are: Building 64 - 120 mrem/hr; Building 67 - 70 mrem/hr; Building 68 - 190 mrem/hr
Contamination Loose surface	inhalation ingestion		200 dpm/100 cm²	Action level is the limit for removable contamination both for materials being freely released from the area and for posting as "Contamination Area".

1 = Exposure limits determined using DOE Derived Air Concentrations from the source terms for each warehouse using the following formula:

$$DAC^{total} = \frac{1}{\%X/(DAC^{X}) + \%Y/(DAC^{Y}) + \%Z/(DAC^{Z})}$$

Table 4: Anticipated Hazards for the Overpacking Project

Contaminant/Hazard	Route of Entry	Exposure Limit	Action Level	Assessment
Inorganics				
Lead, inorganic	inhalation	.05 mg/m³	0.03 mg/m³	The action level will not be approached because containers are in good condition and will not be opened during the overpacking operation. These containers comprise < 1% of the total containers to be overpacked.
Chromium[1]	inhalation	0.5 mg/m³	0.3 mg/m³	
Magnesium Fluoride[1]	inhalation/skin	2.5 mg(F)/m³	1.3 mg(F)/m³	
Physical				
Potentially Pyrophoric Metal	NA		> 3% free metal	2' Containers of potentially pyrophoric thorium metal will be overpacked in 85 gal. drums under an argon blanket.
Heat stress	NA		80°F Dry bulb	Work will be accomplished during late summer and early fall seasons. Additional rest periods may be required.
Cold stress	NA		20° F	Work will be performed in late summer and early fall.
Noise	NA	90 dba, 8hr TWA	85 dba	Hearing protection is required when noise levels exceed 85 dba.
Crane Operation/Electrical Shock	NA		NA	General crane procedures will be followed. All electrical equipment will be GFI protected.
Slips/Trips and Falls	NA		NA	All spills will be cleaned up immediately. General housekeeping will maintain a trip free work space.

1 = Building 68 only.
2 = Less than 1% of the containers to be overpacked in this project.

5.0 STANDARD OPERATING PROCEDURES (SOPs)

Every task of this operation will be controlled by existing SOPs. The applicable Standard Operating Procedures are as follows:

1-C-918	"THORIUM OVERPACKING"
20-C-101	"MOVING AND STORING NUCLEAR MATERIALS ON SITE"
1-C-904	"OPERATOR SCALE CHECKING IN PLANT 1"
20-C-600	"OVERPACKING DETERIORATED CONTAINERS"
20-C-601	"PACKAGING LOW-LEVEL RADIOACTIVE WASTE (LLRW) FOR OFFSITE DISPOSAL"
20-C-602	"INSPECTION AND OPERATION OF NILFISK PORTABLE VACUUM UNITS"
20-C-603	"REMOVAL AND REPLACEMENT OF NILFISK PORTABLE VACUUM UNIT FILTERS AND DUST BAGS"
20-C-606	"HAZARDOUS MATERIAL SPILL CLEAN-UP"
20-C-904	"GENERAL NUCLEAR SAFETY REQUIREMENTS"
FMPC-2089	"THE ONSITE TRANSPORTATION OF RADIOACTIVE AND NONRADIOACTIVE HAZARDOUS MATERIALS"

5.0 EDUCATION AND TRAINING

All training is to be documented, including demonstrated understanding (i.e. tests, checklists, task demonstration, etc.) for all WMCO personnel assigned to work on this operation. As a minimum, all personnel will meet the following training requirements:

- Review of this health and safety plan including site specified hazards and procedures
- WMCO radiation safety training
- WMCO annual respirator training and quantitative fit test
- 40-hour OSHA training
- 8-hour annual refresher training
- WMCO annual Fire Extinguisher Training
- 8-hour supervisor training (supervisors only)
- 24-hour supervised field experience
- Review of MSDSs for all chemicals involved (attached)
- Review of all pertinent SOPs and MSs for the plan (section 5.0)

Start of shift briefings will be conducted each shift and documented. The meeting topics should address one of the following subjects:

task assignment	personnel protective equipment
daily work plan	monitoring tests and results
decontamination	hazard communications
physical stress	emergency procedures
general safety	housekeeping
equipment check	SOPs and MSDSs

7.0 MEDICAL SURVEILLANCE

7.1 Occupational Medicine Program

In accordance with 29 CFR 1910.120 OSHA requirements, all site personnel are required to participate in a occupational medicine program which includes:

7.1.1 Surveillance

7.1.1.1 Pre-employment or baseline medical examination

7.1.1.2 Periotic (routine) and follow up medical examinations when appropriate

7.1.1.3 Termination medical examination

7.1.2 Treatment

7.1.2.1 Emergency

7.1.2.2 Non-emergency

7.1.3 Record Keeping

7.1.4 Program review

7.2 Individual Identification

Prior to the start of work, individuals involved in this project shall be identified by name and badge number. Each individual shall be subject to a medical surveillance approval by the Director of Medical Services. The approval statement shall certify that each individual is medically qualified to perform the work and is physically fit to wear personal protective equipment (PPE).

8.0 MONITORING

Rev Radioactive contamination monitoring/surveillance will be provided daily by Radiological Safety, at the warehouse, overpacking station and as needed at the interim storage facility. Radiological conditions will be monitored during the overpacking operation by continuous air sampling for particulates, loose surface contamination surveys and penetrating radiation surveys for gamma emissions as summarized in Table 5.

Rev Personnel entering the high radiation area shall wear regular TLD, project specific TLD and direct reading dosimeters.

Rev Smear surveys shall be required before any equipment is moved from the contamination control area. Loose surface contamination surveys of the containers will be conducted at each warehouse prior to overpacking and continued as needed thereafter to confirm adequate respiratory protection.

The shielded forklift operator shall perform a whole body frisk prior to entering the cab each time to preclude contaminating the forklift during the operation. All personnel will frisk when exiting the contamination control area.

TABLE 5: Monitoring summary chart.

Hazard Monitored	Sampling Method	Analysis	Frequency
Long-lived Airborne Radiological contaminants	Filter samples and Alpha Spectroscopy	Gross/Alpha Spectroscopy	Continuous
Short-lived Airborne Radiological contaminants	Working level monitor or grab samples for radon and thoron	Single count working level techniques	Continuous or working level grab samples
External/Penetrating Radiation	Direct Reading Dosimeter, TLD [1]	Direct	Continuous
Internal Radiation	In-Vivo, Fecal Samples for thorium and Urinalysis	Thorium	Baseline, or event[2]
External/Loose Surface Contamination	"Frisking"	Direct scintillation	Initially at each warehouse[3], exiting[4]
Temperature	Call Control 6295	Thermometer	Prior to start and as needed.
Lead, inorganic	Dust monitoring	Total particulates by MIE MiniRAM	As specified in Addendum 1 to the plan
Chromium[3]	Dust monitoring	Total particulates by MIE MiniRAM	As specified in Addendum 1 of the plan
Magnesium fluoride	Dust monitoring	Total particulates by MIE MiniRAM	As specified in Addendum 1 of the plan

1 = Project specific TLD required.
2 = Required in the event of incidents with potential for ingestion or when exposure exceeds 40 DAC hours per week.
3 = continued as needed
4 = contamination control area

9.0 LEVELS OF PROTECTION

9.1 Description of Protection

Rev

It is WMCO's philosophy to prevent the spread of contamination, protect workers and the environment with engineering controls and work practices (where feasible) before resorting to the use of personal protective equipment (PPE). Administrative controls will be established for primary contamination control and worker protection. The protective equipment required for this project is determined by the task being performed. The levels of protection required for this project are summarized in Table 6 and expanded below. Table 7 summarizes the respirator requirements based on airborne concentrations of the possible radiological contaminants. Action levels requiring respiratory protection and anti-C clothing are not expected to be approached because the containers being overpacked are in good condition and will not be opened during the overpacking project. Surveys of loose surface contamination will be conducted initially at each warehouse and continued as needed to maintain airborne concentrations below the action levels.

9.1.1 High Radiation Area

Rev

Personnel entering this area to work or observe the overpacking operation shall be required to wear company issued clothes (or smock and shoe covers -- for observers only), TLD badge, project specific TLD badge, direct reading dosimeter and safety glasses.

9.1.2 Contamination Control Area/ Airborne Radioactivity Area

Rev

In addition to the requirements for entering the High Radiation Area, personnel entering the overpacking area to work or observe the overpacking process will be required to wear company issued clothes (smock and shoe covers for observers are acceptable only when no overpacking is being performed).

While overpacking is in process, inner and outer gloves, anti-C coveralls (taped at the wrist and cuff), and respirator selection will be determined by monitoring and required when radiological activities exceed action levels.

9.1.3 Thorium Warehouses

Rev

In addition to the requirements for entering the High Radiation Area, personnel entering the warehouses for work or inspections shall be required to wear company issued clothes, anti-C coveralls (taped at the wrist and cuff), inner and outer gloves, shoe covers, and fullface respirator. The shielded forklift operator will wear the same PPE as required to enter the high radiation area except a PAPR with an ELSA unit will be required.

TABLE 6: Personal Protective Equipment

	Chemical Operators	Supervisor	Shielded Forklift Operator	Forklift Operator	Inspection Personnel
Body	Company issued clothes[1], Anti-C with taped cuffs[2]	Company issued clothes[1], Anti-C with taped cuffs[2]	Company issued clothes[1], Anti-C[2]	Company issued clothes[1]	Company issued clothes[1], Anti-C[2]
Hands	outer glove[1] with inner glove[2]	outer glove[1] with inner glove[2]	outer glove[1] with inner glove[2]	outer glove[1]	outer glove[1] with inner glove[2]
Feet	safety shoes[1]	safety shoes[1]	safety shoes[1]	safety shoes[1]	safety shoes[1]
Head	safety glasses[1] hearing protection[4]	safety glasses[1] hearing protection[4]	safety glasses[1] hearing protection[4]	Safety glasses[1] hearing protection[4]	safety glasses[1] hearing protection[4]
Respiratory	fullface[3]	fullface[3]	fullface[3]	fullface[3]	fullface[3]

1 = minimum requirement
2 = as indicated on radiological work permit
3 = as per Table 7, as determined by monitoring
4 = as required in Table 4

TABLE 7: Respiratory protection summary chart.

MEASUREMENT	ACTION LEVEL RANGES	RESPIRATORY PROTECTION
Radioactivity Buildings 64, 67 and 68	$> 2.0 \times 10^{-13}$ µci/ml to $\leq 5.0 \times 10^{-12}$ µci/ml or ≤ 5 mg/m^3 total dust	Full-face[1], (APR)
Radioactivity Buildings 64, 67 and 68	$> 5.0 \times 10^{-12}$ µci/ml to $\leq 9.0 \times 10^{-11}$ µci/ml or ≤ 5 mg/m^3 total dust	Powered Air Purifying Respirator (PAPR)[1] or Air Supplied Half-face Respirator
Radioactivity Buildings 64, 67 and 68	$> 9.0 \times 10^{-11}$ µci/ml to $\leq 2.0 \times 10^{-10}$ µci/ml or > 5 mg/m^3 total dust	Air Supplied Full-face Respirator

1 = Combination cartridge, organic vapors, and particulate HEPA filter.
2 = Assuming lead content in 35 containers in building 67 is $\leq$ 10 percent by weight of total and using protection factors from OSHA lead standard (29 CFR 1910.1025)

10.0 SAFETY EQUIPMENT

10.1 Personal Protection Equipment (PPE) as specified under section 9.0.

10.2 Spill clean-up equipment to include drums, shovels, and HEPA filtered vacuum units will be available and maintained in the overpacking area.

10.3 All electrical equipment will be protected by Ground Fault Circuit Interrupters (GFI).

11.0 DECONTAMINATION

11.1 The primary method to be employed to ensure that equipment and personnel are free of contamination will be direct alpha scintillation monitoring in lieu of decontamination. If contamination is found, one of three actions will occur.

11.1.1 Disposable items will be packaged and disposed of as LLW.

11.1.2 Non-disposable items will be containerized or wrapped with herculite and sent to the Decontamination Facility.

11.1.3 Personnel contamination:

11.1.3.1 The affected area will be covered.

11.1.3.2 Radiological Safety and the AEDO shall be notified.

11.1.3.3 The individual will be transported to the infirmary.

11.1.3.4 Radiation Safety shall decontaminate the affected areas in accordance with SPP-35-017, "Personnel Decontamination."

12.0 CONTINGENCY PLANS

12.1 Spill Procedures

12.1.2 In the event of a spill, the workers shall immediately notify (by radio, if possible) the AEDO of the spill. Clean-up shall be done in accordance with Standard Operating Procedure (SOP) 20-C-606, "Hazardous Material Spill Clean-up," and under the direction of the AEDO. Clean-up of spilled material shall be undertaken only after consultation with the Radiation and Industrial Safety representatives to determine any other requirements. It is not anticipated that any spills will require action beyond normal reporting and clean-up under the direction of the AEDO. A Minor Event Report shall be submitted for any spill incident.

12.2 Incidents or Injuries

Rev 12.2.1 Any circumstance which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake to IRS&T Radiological Safety Section and the AEDO for evaluation. Nasal smears shall be taken by the accompanying RST and analyzed immediately following the incident, or as soon as possible. The involved employees shall report to the Invivo Examination Center (IVEC) at the end of their shift, or as directed, to complete an Incident Investigation Report (IRR) and obtain a fecal sample kit and sample submittal instructions. Fecal samples will be required prior to project start and if exposure exceeds 40 DAC hours as a result of the incident. The dosimetry subsection will analyze the results and may require additional bioassay monitoring as necessary. The involved employees shall also report to the Urine Sampling Station at the end of their shift and start of their next shift to submit a samples. Employees are responsible for complying with additional requirements as specified by the Radiological Safety Section. The supervisor shall consider the circumstance to be a minor event and shall immediately complete a "Minor Event Report" per FMPC-704.

12.3 Pre-emergency Planning

12.3.1 During the training and pre-work safety meetings, all employees involved in this task shall be trained and reminded of the provisions of the plant emergency procedure, alarm signals and communications, evacuation routes, and emergency reporting.

12.4 Lines of Authority

12.4.1 The supervisor-in-charge has the primary responsibility for the prevention of emergency conditions. In the event that an emergency does occur, the individual involved in or observing the situation shall immediately notify the supervisor, the communication center, or the AEDO. The AEDO is responsible for ensuring that corrective actions have been implemented, the appropriate individuals notified, and reports completed as required.

12.5 Evacuation

Rev 12.5.1 In the event of an emergency which necessitates an evacuation of the high radiation area, a supervisory alert alarm (3-3 alarm) will be sounded over the plant alarm system. Then a voice message will follow over the Emergency Message System (and radio) instructing individuals to go to their designated Rally Point (see Figure 1, attached). Individuals shall immediately proceed to the Rally Point and participate in the accountability process. Assistants will follow relay instructions given by the Rally Point Coordinator. When an "all-clear" condition has been achieved, individuals will be released from the Rally Point.

12.6 Emergency Notification

12.6.1 In the event of any emergency, leaks, spills, or fires, personnel will evacuate the area and immediately report the emergency. Emergencies can be reported over the telephone by dialing 6511, by pulling a manual fire alarm or over the radio by calling "Control." The communication center operator will activate the emergency response team and dispatch them to the affected location.

12.7 Additional Information

12.7.1 Hospitals

12.7.1.1 The FMPC Medical Facility (building 53) is the primary initial treatment facility for onsite injuries. Figure 5, (attached) indicates the route from each warehouse to the Medical Facility. The FMPC ambulance will transport the injured to the nearest hospital if necessary. FMPC maintains an emergency response capability which includes an ambulance and Emergency Medical Technicians.

12.7.2 Emergency Telephone Numbers

12.7.2.1 Ambulance: 6511
Hospital: 6511
Fire: 6511

Name	Work	Radio
EMERGENCY RESPONSE	6511	Control
Industrial Hygiene	6207	357
Radiation Safety	6889	355
Fire and Safety	6235	303
Assistant Emergency Duty Officer (AEDO)	6431, or 6295	202

13.0 AMENDMENTS

13.1 This Health and Safety Plan is based on information available at the time of preparation. Unexpected conditions may arise that require reassessment of the safety procedures. Unplanned activities and/or changes in the hazard status shall require a review of and may necessitate changes in this plan.

Changes in the anticipated hazard status or unplanned activities are to be submitted as an amendment to this plan. Amendments must be approved by the Operable Unit 3 manager/project engineer and the appropriate IRS&T representative (e.g., Industrial Hygiene or Radiation Safety representative, depending on change) prior to implementation of the amendment.

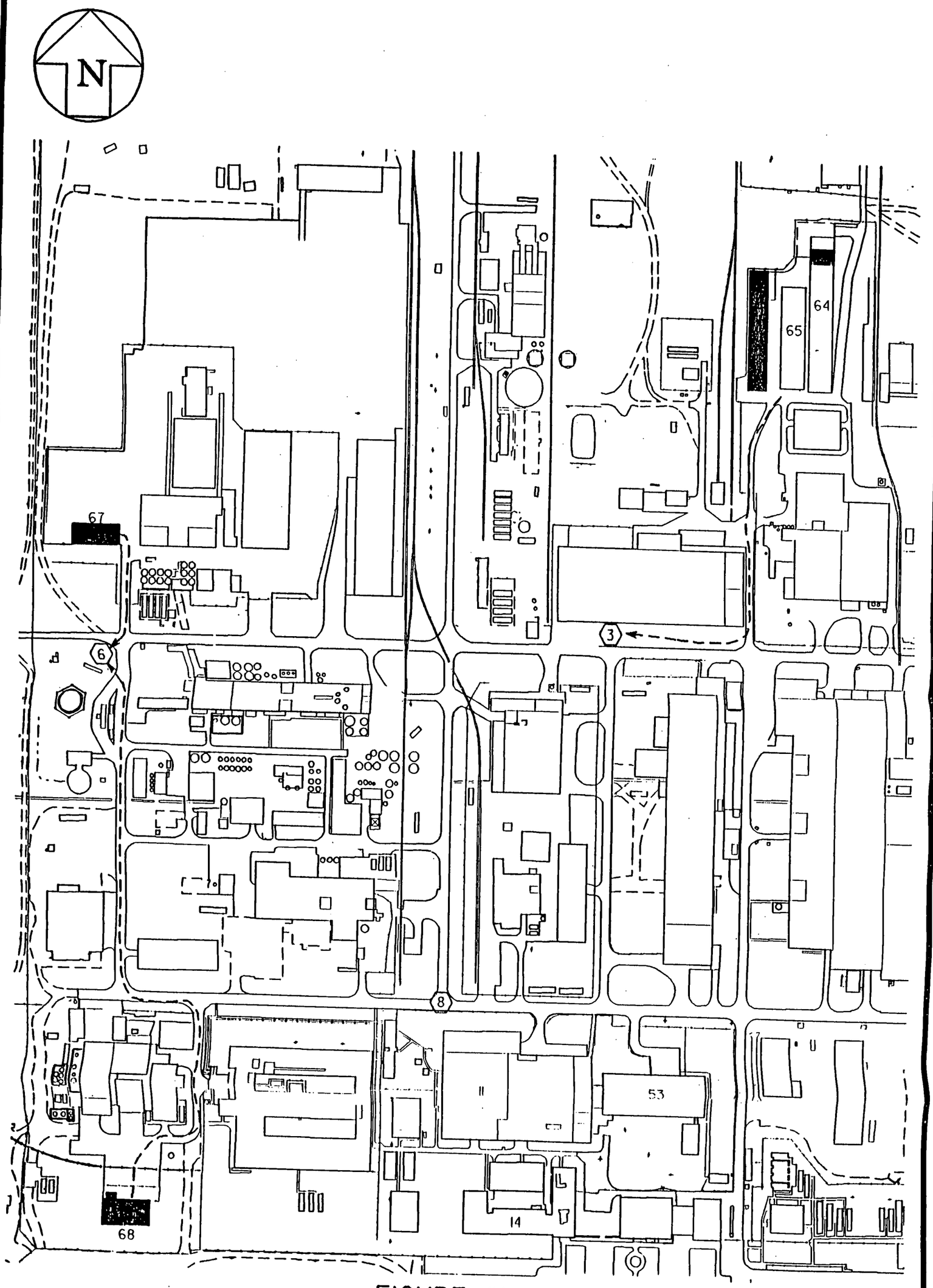

FIGURE #1.
THORIUM OVERPACKING
WORK AREAS
AND
RALLEY POINT ROUTES

LEGEND

(8) — RALLEY POINTS

— THORIUM STORAGE

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3511

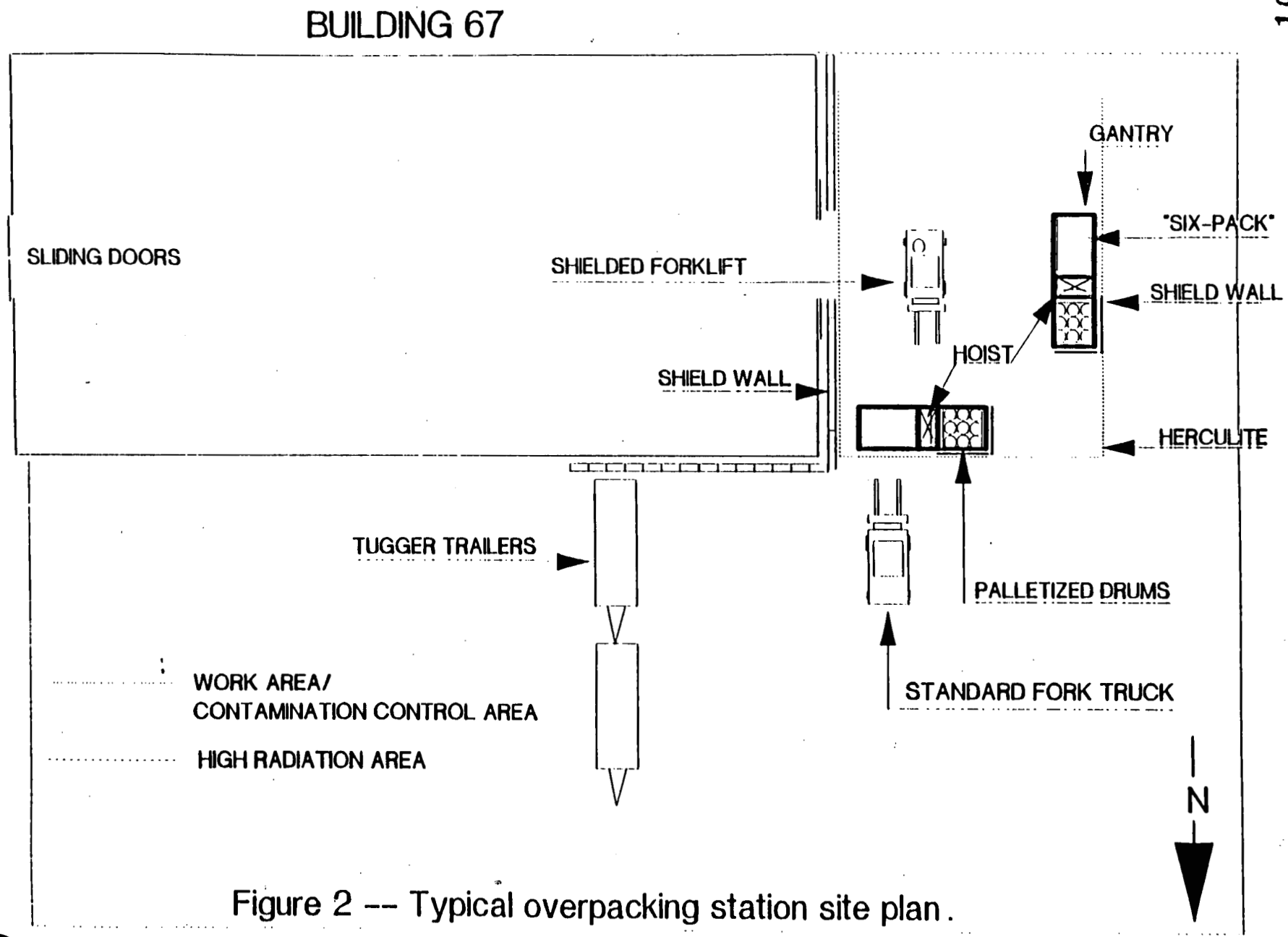

Figure 2 -- Typical overpacking station site plan.

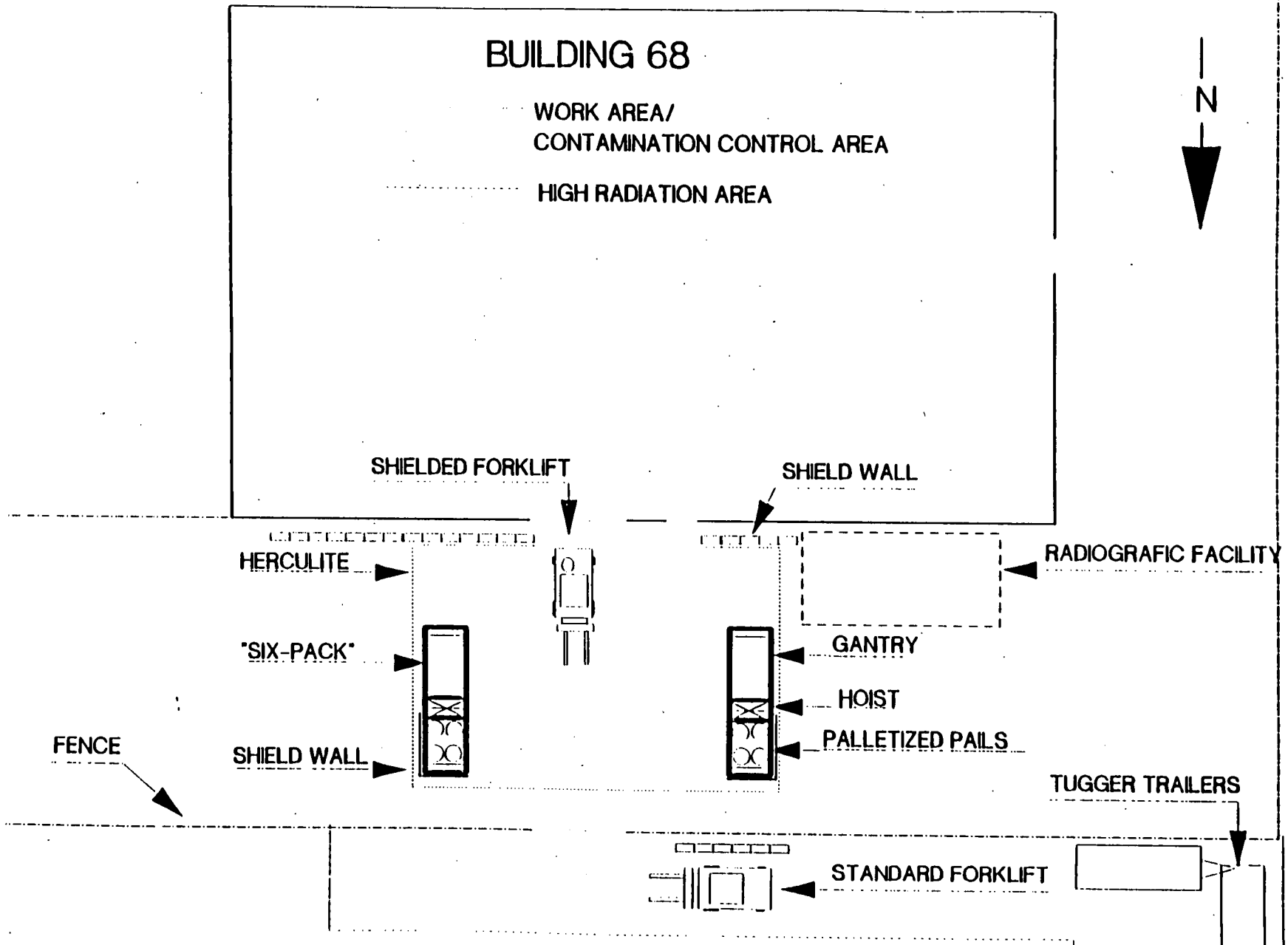

Figure 3 -- Typical overpacking station site plan.

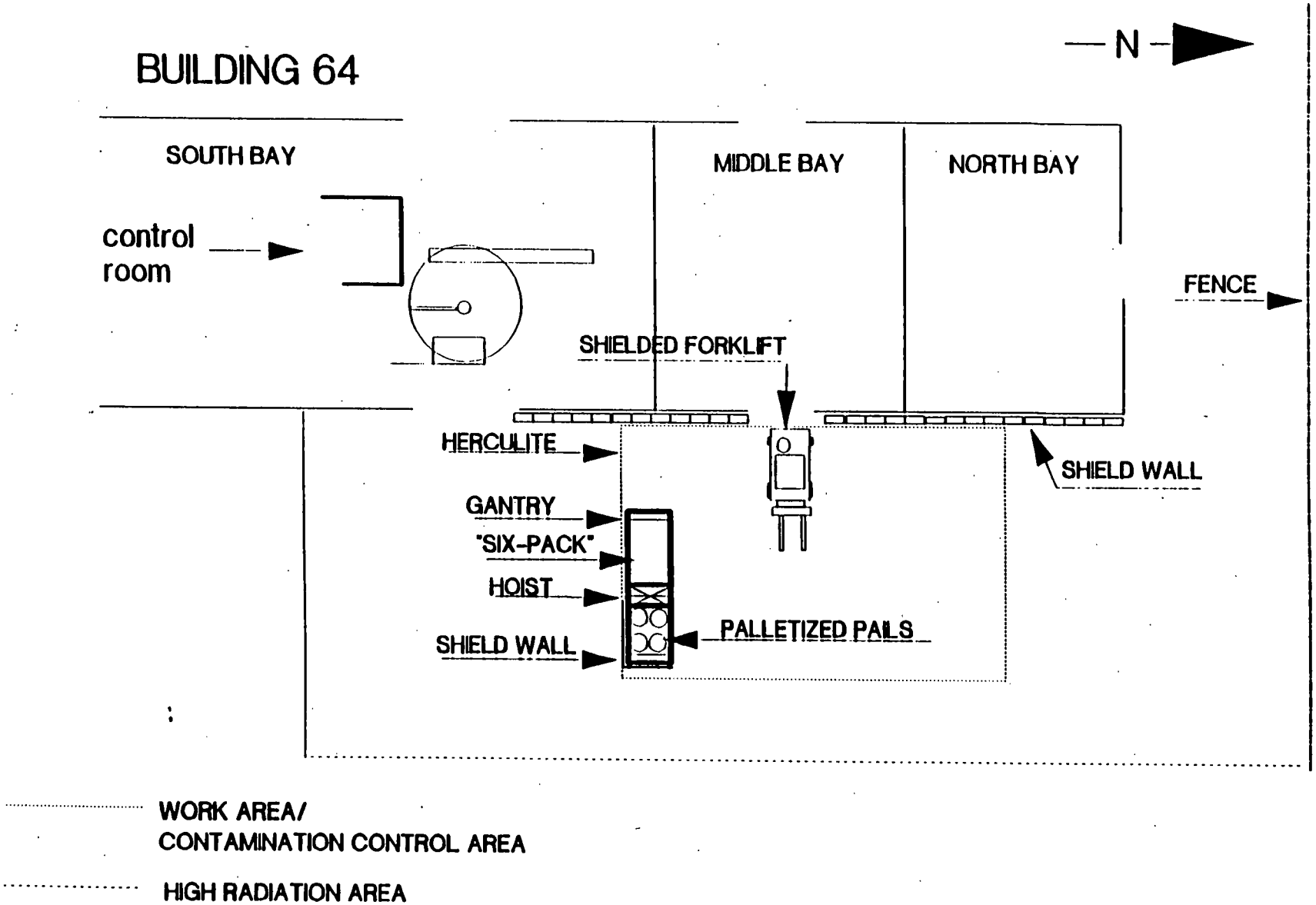

Figure 4 -- Typical overpacking station site plan.

ADDENDUM 1
TO
THORIUM OVERPACKING PROJECT SPECIFIC HEALTH AND SAFETY PLAN
FOR THE CONTAINERS IN BUILDINGS 67, 68, AND THE MIDDLE BAY OF 64.
AUGUST 24, 1991

The Thorium Overpacking Project Specific Health and Safety Plan for the Containers in Buildings 67, 68, and the Middle Bay of 64 (herein referred to as the" plan") was developed on the premise that every task performed in the operation is controlled by existing procedures. The plan was developed to provide information on the safety concerns of thorium.

This addendum is provided to list the limiting conditions in the existing procedures that apply to the Thorium Overpacking Project but are not adequately discussed in the health and safety plan. The specific limiting conditions from these SOPs that will apply to the overpacking project for the thorium containers in buildings 67, 68, and the middle bay of 64 are listed below.

Materials Control and Accountability:

Identification:

Tare weight of white metal box will be marked on the outside of the container prior to filling.

The FMPC lot code and weight of each item added to the white metal box will be recorded on the form provided by MC&A. This weight is determined by subtracting the total weight of the container before the item was added from the total weight of the container after the item was added.

No containers will be overpacked until its FMPC lot code is checked against the list provided and verified by MC&A. Every effort should be made to overpack containers from the same lot code together in the same white metal box (boxes). Containers that cannot be identified will be put back in the warehouse until all other containers have been overpacked. Unidentified containers will be transported to the middle bay of building 64 as a containers needing further RCRA action.

Onsite movement of completed overpacks from the overpacking area to the interim storage location will be controlled by MC&A using EE cards in lieu of the SOPs listed in the plan (20-C-101 and FMPC 2089).

Physical Limits:

Capacities:

The forks on the shielded forktruck is limited to 3,000 pounds. Heavier loads will be moved using standard forktrucks with capacity rated for the load to be moved.

The gantry crane is designed to lift the heaviest individual container in the thorium inventory. A one and one-half ton (3,000 pound) chain hoist is suspended from the gantry for this operation.

White metal boxes have a maximum gross weight of 6,000 pounds when full. Boxes will be filled efficiently to minimize the number of white metal boxes to dispose (eight 30 gallon containers, six 55 gallon containers, or any combination of containers are acceptable).

The drum grabber used to lift 30 and 55 gallon containers is certified to lift 1,300 pounds. Heavier containers and crates will be lifted into white metal boxes using slings.

The platform scales used for this project have a capacity of 10,000 pounds.

Records of daily equipment checks prior to using the shielded forktruck, gantry cranes, and scales will be maintained on daily record sheets.

Radiological:

All work will be controlled by Radiation Work Permits (RWP). RWPs will control who can enter the work area and what personal protective equipment will be required in the work area based on the monitoring data from the work area.

An ALARA dose estimate for the entire job is 28.7 manrems. Any personnel approaching 150 mrems per week will be assigned to other projects. Time, distance and shielding practices will be utilized to work toward a total exposure goal of 25.8 manrems or less for the job. Personnel will remain behind shield walls to perform the drum handling, identification, overpacking tasks. Thorium containers will be lifted and immediately placed inside the white metal box. Thorium containers will not be suspended above the shield wall longer than necessary to move it to the overpack. Work beyond the shield walls must be limited to simple tasks that can be quickly accomplished. If complex or time consuming work is required, the work will not be conducted until all containers of thorium are removed from the work area or, if possible, the work is performed in an area with lower dose rates.

In the event that the shielded forktruck is unavailable, a standard forktruck may be used as approved by Radiological Safety on a case by case basis.

In the event of a spill, all personnel will immediately evacuate the area, follow the emergency plan (FMPC-2046), wait for Radiological Safety Technicians to survey the area, determine the proper personal protective equipment required to enter the area, and clean up the spill as directed by the AEDO.

Respiratory Protection:

Respiratory protection will be determined by the Radiological Technicians and indicated on the Radiological Work Permit based on airborne radiological concentrations as indicated in Table 7 of the plan. The airborne concentration of radioactive contaminants is used for respirator selection because they are more restrictive than the limits for the HSL contaminants or magnesium fluoride listed below and are present at much higher levels in drummed materials.

Industrial Hygiene will maintain the Powered Air Purifying Respirators (PAPR) and Emergency Life Support Apparatus (ELSA) units and supply clean units with charged batteries to the shielded forktruck driver(s) daily.

Industrial Hygiene Technicians will be contacted to perform the air monitoring for inorganic lead, chromium^{+3} and magnesium fluoride as specified in Table 5 of the plan. Table 5 has been revised to clarify the method of monitoring and analysis for potential HSL contaminants (attached). This support will only be required for 35 containers in building 67 which have been identified as hazardous for the contaminants listed above. Only building 68 contains magnesium fluoride, the handling of which is not in the scope of this project.

Fire Safety:

Two containers in building 67 a potentially pyrophoric. These containers will be overpacked after all the other thorium containers in building 67 have been overpacked and/or moved to an interim storage location. The two potentially pyrophoric containers will be overpacked and stored in accordance with the conditions listed in the existing OSR for storage of potentially pyrophoric thorium.

Housekeeping:

At the end of each overpacking episode, the Radiological Safety Technicians will survey the area for contamination that if found will be cleaned up immediately. Equipment will be secured and all containers of thorium returned to the warehouse or overpacked and moved to the interim storage location before operations are discontinued for the day. No partial overpacks will be left in the work area after operations discontinue.

General clutter (debris, used personal protective equipment, etc.) will be removed from the work area immediately to reduce the risk of slips, trips, and falls.

Tears in the herculite liner will be repaired (patched) before any additional thorium containers are removed from the warehouse to be overpacked.

Environmental Conditions:

Rain/Snow:

Overpacking will be suspended when precipitation is sufficient enough to cause puddling on the herculite contamination control pad. Thorium overpacking operations will be curtailed during severe weather alerts.

Heat/Cold:

More frequent or extended breaks may be necessary to maintain worker safety as covered in OSHA 1910.120 worker training.

This addendum to the Thorium Overpacking Project Specific Health and Safety Plan for the Containers in Buildings 67, 68, and the Middle Bay of 64 was prepared to address specific concerns realized during the Operational Readiness Review for the project. Additional changes in the anticipated hazards or other unplanned activities will be submitted as additional addenda to the plan.

APPROVALS:

Plan Author: Jeff Rowe Date: 8/30/91

Manager, Environmental Management: SW Coyle Date: 8/30/91

IRS&T: [illegible] Date: [illegible]

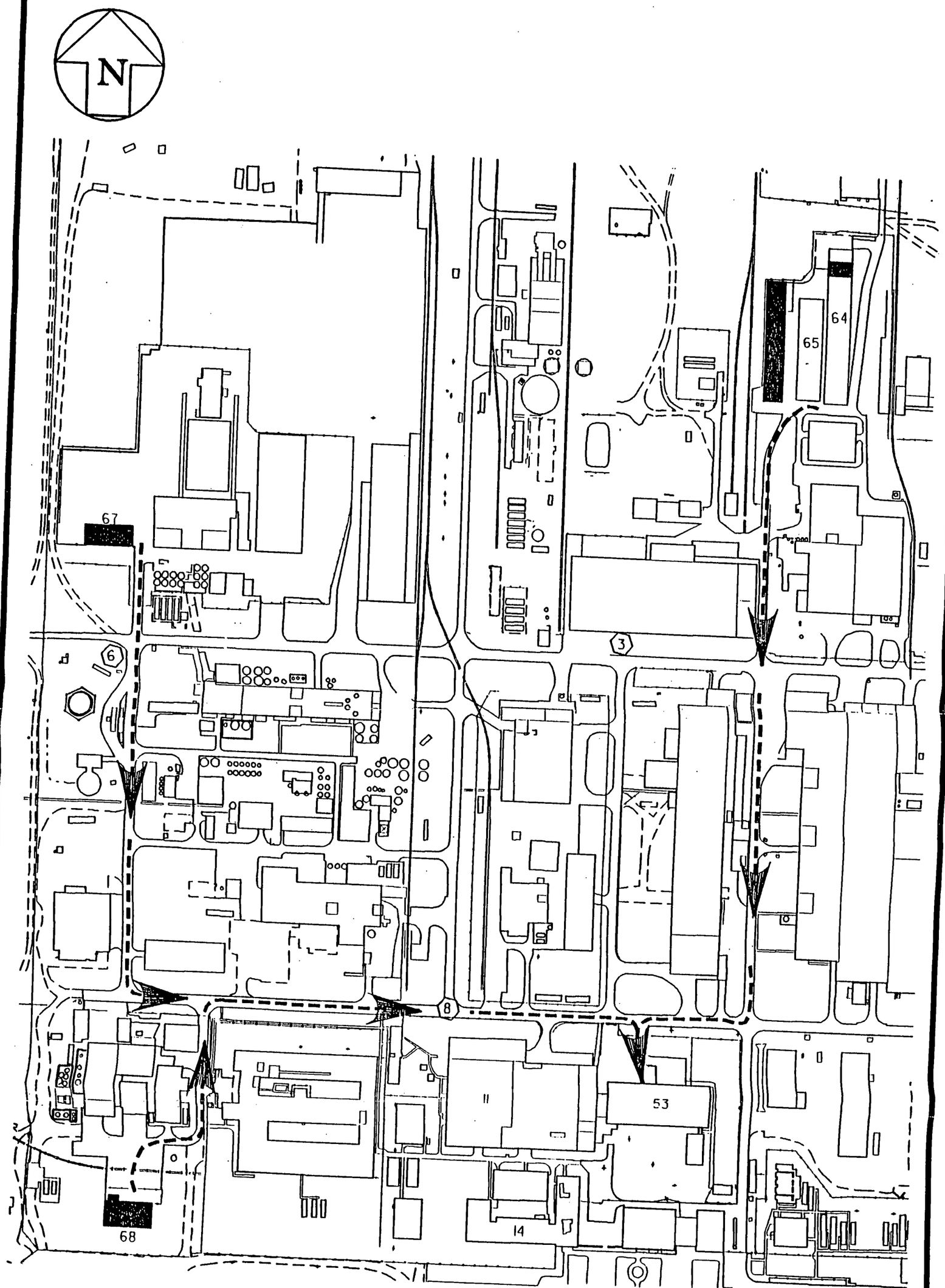

FIGURE #5.
THORIUM OVERPACKING
EVACUATION ROUTES TO
MEDICAL FACILITY (BLDG. #53)

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STEP 1.

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1.0 POLICY

Westinghouse Environmental Management Company of Ohio (WEMCO) shall maintain control and accountability of nuclear materials at the Fernald Environmental Management Project (FEMP) in accordance with DOE orders.

2.0 SCOPE

This site policy implements the responsibilities and requirements for nuclear materials control and accountability program planning and management as contained in Materials Control and Accountability (MC&A) Plan, PL-FMPC-3006.

3.0 DEFINITIONS

3.1 Accountability - The functions of nuclear materials management which pertain to the measurement, recording and reporting system of transfers and inventories which provides current and accurate information as to the chemical and physical form, disposition, quantity and availability of nuclear materials.

3.2 Book Inventory - The quantity of nuclear material shown in the accounting records to be present at a given time.

3.3 Depleted Uranium - Uranium having less than 0.711 percent by weight of the isotope U-235.

3.4 Economic Discard Limit - The value of U-235 and uranium assay at which a uranium residue may be declared a waste material.

3.5 Enriched Uranium - Uranium containing greater than 0.711 percent by weight of the isotope U-235.

3.6 Isotopic Crossover - Any accidental or intended mixing of uranium materials having different percentages of U-235 with the result of downgrading the material having the higher enrichment.

3.7 Lot Marking and Color Coding System - The method used at the FEMP for nuclear material identification by assigning a 15 digit alphanumeric code number (11 digits for thorium) and using colors to assure complete separation of depleted, normal and enriched uranium or thorium materials, see RM-0005.

3.0 DEFINITIONS (cont.)

3.8 Low-Level Radioactive Waste - A term applied to nuclear materials which have been evaluated and determined to be uneconomical to recover. This term also applies to such materials as trash, construction rubble, and soil that is contaminated with nuclear materials. Materials designated for shipment off-site must meet criteria in "Waste Certification Program Plan", QA 87001.

3.9 Material Balance Account (MBA) - A subsidiary account of the facility for a specific process to establish accountability and to localize inventory differences.

3.10 Normal Operating Losses (NOL) - Measured or estimated loss of nuclear material (whether in the form of a solid, liquid or gas) from a process stream which includes operating losses, measured discards and accidental losses. These losses must be categorized, reported to DOE, and removed from the nuclear materials inventory.

3.11 Normal Uranium - Uranium containing 0.711 percent by weight of U-235, which is that isotopic content which occurs in nature.

3.12 Nuclear Material Discard - Nuclear material removed intentionally from process inventory and disposed of as waste by approved methods.

3.13 Nuclear Materials Management and Safeguards System (NMMSS) - The national database and information support system for nuclear materials controlled by the U. S. Government.

3.14 Nuclear Material (NM) - Collective term including all such materials designated by the DOE. A listing of designated nuclear materials can be found in DOE Order 5633.3; however, at the FEMP, nuclear materials shall mean depleted, normal and enriched (less than 20% U-235 by weight) uranium and thorium.

3.15 Physical Inventory - Quantity of nuclear material determined to be on hand by counting or measuring it, usually sampling, weighing and analyzing samples taken; also by calculations, outage measurements and pressure-volume-temperature relationships.

3.16 Reporting Units - Unit of measurement, for a given type of nuclear material, used for reporting transactions or inventory information to the DOE-ORO and to the NMMSS.

3.0 DEFINITIONS (cont.)

3.17 Safeguards - Measures mandated by DOE orders designed to prevent theft or diversion of nuclear materials. At the FEMP, these requirements are satisfied by the implementation of physical and administrative controls over the location and movement of nuclear materials. A set of graded safeguards requirements entails less stringent physical controls over the types of nuclear materials found at the FEMP, compared to requirements for weapons-grade materials located at other sites.

4.0 RESPONSIBILITIES

4.1 Materials Control and Accountability (MC&A) - Responsible for the nuclear materials control and accountability program at the FEMP. To achieve this objective, MC&A must formulate plans, procedures, control systems, performance criteria, provide training, oversee physical inventories, conduct surveys, maintain an accounting of all nuclear material and report regularly to DOE and WEMCO management regarding the physical and book inventories.

MC&A is responsible for reporting measured discards and process emissions in accordance with DOE Directives, and for declaring nuclear materials below the economic discard limit as waste.

MC&A is responsible for maintaining the FMPC Lot Marking and Color Coding System, RM-0005, and the MC&A Plan, PL-FMPC-3006.

4.2 Site Services - Responsible for sampling, handling, weighing, loading, processing, storing, inventorying, and avoiding unnecessary isotopic crossover of nuclear materials at the FEMP. Also responsible for maintenance of NM scales and water treatment operations which control NM discards. Documents that track the movements of nuclear materials onsite are originated by Facility Operations supervisors/managers, but must be approved by MC&A. Assists Environmental Compliance in providing calculated stack and scrubber loss data in a timely manner to allow MC&A to meet normal operating loss reporting deadlines to the DOE.

4.3 Analytical Laboratory - Responsible for determining and reporting uranium assay and isotopic analysis of all uranium-bearing materials for nuclear materials control and accountability. The analytical laboratory is also responsible for maintaining nuclear materials inventory records for the proper and safe storage of all nuclear materials in their jurisdiction.

4.0 RESPONSIBILITIES (cont.)

R 4.4 Environmental Compliance and Quality Assurance - Environmental
R Compliance must provide calculated stack and scrubber loss data in a
R timely manner to allow MC&A to meet normal operating loss reporting
R deadlines to the DOE.

4.5 Safeguards and Security Section - Responsible for safeguarding the FEMP's nuclear materials inventory against theft or diversion and for preparing the Site Safeguards and Security Plan.

4.6 Traffic Section - Responsible for the safe transport of nuclear materials in accordance with DOT, DOE and EPA regulations as well as FEMP internal procedures, including MC&A requirements.

4.7 Information Systems - Responsible for the actual electronic data processing (EDP) for the nuclear materials accounting system.

4.8 Cost Accounting - Responsible for calculating and assigning monetary values applicable to all nuclear materials inventories in each material balance account. Prepares Product Cost Transfer Vouchers to transfer the value of material shipped off-site.

4.9 Shippers of Nuclear Material from the FEMP - The off-site shipment of all nuclear materials (including samples) must be via a "Shipping Order for Nuclear Material" (Form FMPC-CONT-558), see Figure 2.

5.0 GENERAL

5.1 DOE Order 5633 Series establishes the requirements, responsibilities and authorities for nuclear materials control and accountability under Department of Energy jurisdiction. WEMCO, a DOE contractor, is subject to all applicable parts of these regulations.

5.2 DOE directives, particularly DOE Order 5633.3, require facilities possessing nuclear materials to prepare a materials control and accountability plan and procedures.

The "Materials Control and Accountability Plan" (PL-FMPC-3006) supplemented by the MC&A Internal Procedures Manual, satisfy these requirements. These documents identify the responsibilities and requirements for nuclear materials control and accountability program management, threat considerations, performance criteria, the accounting system, physical inventories, measurements and measurement control, control limits, loss detection elements, nuclear material alarms, access control, containment and surveillance.

5.0 GENERAL (cont.)

5.3 A DOE issued inspection guide, referred to as the "Inspection and Evaluation (I&E) Standards and Criteria-Material Control and Accountability," where applicable, serves as the basis for evaluation of MC&A. This guide stipulates training requirements for all MC&A personnel, as well as other facility personnel involved in making nuclear material measurements, weighing, sampling and analysis.

5.4 No Category I, II or III nuclear material (plutonium, U-233, or enriched uranium containing 20 or more percent U-235) is stored at the FEMP. Only certain Category IV nuclear material (enriched uranium containing less than 20 percent by weight of the isotope U-235, normal, and depleted uranium, and thorium plus an exempt quantity of laboratory standards greater than 20% U-235) is authorized at the FEMP.

5.5 The requirements for handling nuclear materials at the FEMP are included in the departmental standard operating procedures.

5.6 All nuclear materials are to be lot marked and color coded as outlined in RM-0005, "Lot Marking and Color Coding System."

5.7 All nuclear material shipments to the FEMP must be authorized by Form FMPC-ES&H-1987, "Authorization to Ship Nuclear Materials" (See Figure 1). All shipments from the FEMP must be authorized by Form FMPC-CONT-558, "Shipping Order for Nuclear Material" (See Figure 2).

5.8 All nuclear material data that is to be released outside the WEMCO organization, including estimates or calculations of possible process losses, must be submitted to MC&A for review and comment before release to the public or the news media.

6.0 PROCEDURE

Detailed procedures and instructions for implementing this site policy and procedure are provided in PL-FMPC-3006, "Materials Control and Accountability Plan."

7.0 APPLICABLE DOCUMENTS

7.1 Drivers

7.1.1 DOE Guide, "Inspection and Evaluation (I&E) Standards and Criteria for Nuclear Materials Control and Accountability"

7.1.2 DOE Order 5633.2, "Control and Accountability of Nuclear Materials: Responsibilities and Authorities"

7.0 APPLICABLE DOCUMENTS (cont.)

7.1.3 DOE Order 5633.3, "Control and Accountability of Nuclear Material"

7.1.4 DOE Order 5633.4, "Nuclear Materials Transactions: Documentation and Reporting"

7.1.5 DOE Order 5633.5, "Nuclear Materials Reporting and Data Submission Procedures"

7.2 References

7.2.1 FMPC-519, "Management of Hazardous Waste"

7.2.2 IN-6032, "Control of Construction/Maintenance Waste"

7.2.4 PL-FMPC-3006, "Materials Control and Accountability Plan"

7.2.5 RM-0005, "FMPC Lot Marking and Color Coding System"

7.2.6 QA 87001, "Waste Certification Program Plan"

8.0 FORMS USED

8.1 FMPC-ES&H-1987, "Authorization to Ship Nuclear Materials"

8.2 FMPC-CONT-558, "Shipping Order for Nuclear Material"

Additional forms are dispersed throughout the MC&A Manual and are referenced in Section XIV of the MC&A Manual and Section 14 of the Plan.

9.0 FIGURES

9.1 Figure 1 - FMPC-ES&H-1987, "Authorization to Ship Nuclear Material"

9.2 Figure 2 - FMPC-CONT-558, "Shipping Order for Nuclear Material"

Westinghouse Materials Company of Ohio
AUTHORIZATION TO SHIP NUCLEAR MATERIALS

WMT No.: _____

TO: C. W. Lower, Nuclear Materials Representative
Westinghouse Materials Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239

Authorization is requested to ship the following nuclear materials to WMCO (Station FVC):

Type: ☐ Normal ☐ Enriched ☐ Depleted ☐ Thorium

Note: Weights listed are in: ☐ Lbs. ☐ Kgs. ☐ Gms.

SCRAP CLASS	QUANTITY & TYPE CONTAINER	PHYSICAL OR CHEMICAL DESCRIPTION	NET WEIGHT	ELEMENT WEIGHT	U-235

ADDITIONAL DESCRIPTION

1. U-235 RANGE 2. ALLOYING OR ADDITIVE ELEMENTS 3. MAX NET WT OF CONTAINERS - IF NOT UNIFORMLY PACKED.

4. CRITICALITY CONTROL EMPLOYED ☐ MASS ☐ MASS ☐ VOLUME ☐ CONCENTRATION ☐ CYLINDER

☐ OTHER (Specify) _____ State Maximum Value _____

5. SHIPPER'S COLOR CODING OR SPECIAL IDENTIFICATION

6. PACKAGE DESCRIPTION - IF NOT IN STANDARD CONTAINERS

7. SPECIAL PRECAUTIONS

Nuclear materials are to be identified, packaged and shipped in accordance with all provisions of the latest DOE Manual Order. Notification and DOE Form - 741 must include this authorization number.

REQUESTED BY

STATION LOCATION CODE

REQUESTED SHIPPING DATE

DATE OF REQUEST

SIGNATURE NUCLEAR MATERIALS REPRESENTATIVE

APPROVAL (For FVC Use Only)

Scheduled Date of Delivery _____ DATE

Approved By _____ NUCLEAR MATERIALS REPRESENTATIVE _____ DATE

REMARKS

NO	DISTRIBUTION OF COPIES
1	1 FVC (for Approval and Return to Shipper)
2	FVC - MC&A - RECORD COPY
3	Originator
4	
5	

FMPC ES&H-1987 REV. 1 (1-88)

AUTHORIZATION TO SHIP NUCLEAR MATERIALS
FMPC-ES&H-1987
Figure 1

Westinghouse Materials Company of Ohio

SHIPPING ORDER FOR NUCLEAR MATERIAL

A

Date Prepared: _____

SHIP TO | ROUTING | SHIPPING AUTHORIZATION NO | SHIPPING ORDER NO

STREET | PREPAID | CAR OR TRAILER NO. | BILL NO. | SHIPPED FROM PLANT | ORIGINATOR NO.

CITY | STATE | COLLECT | BILL OF LADING NO. | QUALITY CONTROL APPROVAL | DATE SHIPPED

SPECIAL INSTRUCTIONS | COMPUTER CONTROL NO. | PRODUCT NO. | TIME SHIPPED

Type of Material _____ FMPC Production Order No _____ Originator's Signature _____

Station R/S _____ DOE 741 No _____ Shipment Authorized By _____

WMC DATA			ORIGINATOR'S DATA						MATERIAL CONTROL DATA						
WBS	COST CODE	741 NO	P.O. NO	LOT NUMBER	QUANTITY	WEIGHT LBS. GROSS	TARE	NET	WBS CODE	ELE ANAL	ELE LBS	ELE GRAMS OR KGS	LIMIT ERROR ELE	ISO ANAL	UPD GRAMS OR KGS	LIM ERROR %

DISTRIBUTION OF COPIES			
1	WMA - RECORD COPY	5	Cost Accounting
2	Shipping Group	6	Originator of Shipping Order
3	Quality Control		
4	Production Control		

FMPC CONT 558 - REV 6-6-89

I, _____ certify that this shipment was made on the above date after complying with all security regulations

A

Audited by _____ Date _____

A

SHIPPING ORDER FOR NUCLEAR MATERIAL
FMPC-CONT-558
Figure 2

RECORD IS ISSUE/REVISIONS

DATE	REV. NO	DESCRIPTION AND AUTHORITY
08-26-87	0	Revision to document.
09-21-88	1	Revision to document.
01-26-90	2	Revision to document.
05-28-91	3	Revision to document.
12-19-91	4	Revised to incorporate temporary revision T91-001, per Request No. S92-006, initiated by D. Dunaway.

1.0 PURPOSE

The purpose of this procedure is to provide the steps for the inspection and evaluation of containerized low-level radioactive waste (LLRW) designated for shipment offsite.

2.0 APPLICABILITY

This procedure shall apply to LLRW storage areas and LLRW designated for the Plant 1 sampling line.

3.0 RESPONSIBILITIES

3.1 The **Supervisor** shall be responsible for the following:

3.1.1 Designating the material to be inspected or sampled.

3.1.2 Supplying the packaging materials.

3.1.3 Coordinating and notifying supporting organizations of assistance as required per this SOP.

3.1.4 Labeling packaged material in accordance with the FEMP Lot Marking and Color-Coding System.

3.1.5 Designating holding areas as specified by this SOP.

3.1.6 Contacting Industrial Hygiene to determine the appropriate respiratory protection for the processing performed.

3.1.7 Providing operators with the required respiratory protection.

3.2 **Materials Control and Accountability** shall be responsible for maintaining and reconciling the inventory records of Plant 1 nuclear waste materials.

3.3 **Operators** shall be responsible for inspecting and sampling containerized LLRW per this SOP.

3.4 **Radiological Safety** shall be responsible for issuing a Radiation Work Permit (RWP) and ensuring radiological safety requirements are met when a container is opened.

4.0 DEFINITIONS

4.1 Overpack - A container enclosing one or more smaller containers.

4.2 Net Weight - Gross weight minus the tare weight of the container.

4.0 DEFINITIONS (cont.)

4.3 Respirable Fines - Particulates and vapors capable of being inhaled.

4.4 Deteriorated Container - A container having rust, holes, or dents which could jeopardize the integrity of the container.

4.5 Toxicity Characteristic Leaching Procedure (TCLP) - A RCRA term referring to wastes, the extracts from which contain

4.6 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 and proper management of hazardous wastes.

5.0 REFERENCES

5.1 SOP 20-C-902, "Liquid Propane Gas (LPG) Powered Handstackers and Tuggers"

5.2 SOP 1-C-916, "Plant 1 Hoists and Cranes"

5.3 SOP 1-C-904, "Operator Scale Checking in Plant 1"

5.4 SOP 1-C-101, "Sampling Residue and Waste Materials"

5.5 SOP 20-C-600, "Overpacking Deteriorated Containers"

5.6 SOP 1-C-602, "Low Level Radioactive Waste (LLRW) Shipment Preparation"

5.7 SOP 20-C-615, "Controlled Holding Area"

5.8 SOP 20-C-905, "Ventilation Flow Indicators"

5.9 SSOP-0024, "Packaging Low Level Radioactive Waste (LLRW) for Offsite Disposal"

5.10 RM-0005, "FEMP Lot Marking and Color Coding System"

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS

6.1 A defined safety system is not involved.

6.2 Safety glasses with side shields shall be worn unless other eye protection is specified by the supervisor, IRS&T, or posted signs.

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS (cont.)

6.3 Respiratory protection provided by the supervisor shall be worn when required.

6.4 Leather-palm gloves shall be worn over plastic gloves with cotton inserts while handling drums/containers, operating equipment, and when handling rough, sharp-edged, or contaminated material.

6.5 HEPA type filter vacuum cleaners or an IRS&T approved vacuum system with a current DOP test label properly affixed to vacuum shall be used for cleaning.

6.6 Face shields with chemical cover goggles shall be worn when removing lids or bungs on containers filled with liquids or during operations where a liquid splash could occur.

6.7 Radiological Safety shall be contacted and provided a detailed work scope before opening any container for specific radiological safety requirements specified in a Radiation Work Permit (RWP).

6.8 A rubber apron shall be worn if there is a possibility of being splashed with a chemical that could cause injury to the skin.

6.9 Operators shall have reviewed and be familiar with the information contained in Material Safety Data Sheets for the chemicals/hazardous material being used.

6.10 Any circumstance which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake to IRS&T Radiological Safety Section for evaluation. The involved personnel shall report to the Urine Sampling Station at the end of their shift to complete a Incident Investigation Report (IIR) (Form FMPC-ES&H-1458), and submit an incident urine sample. The involved personnel shall also report to the Urine Sampling Station at the start of their next shift to submit a followup urine sample. Employees are responsible for complying with additional requirements as specified by the Radiological Safety Section.

6.11 In case of contact with a chemical, contaminated clothing shall be removed immediately and the affected body area flushed a minimum of 15 minutes with water in an eye bubbler/safety shower. Injured personnel shall report to Medical.

7.0 PROCEDURE

7.1 Inspecting and Evaluating Drummed Residues at the Plant 1 Sample Line

7.1.1 Initiate a Material Evaluation Form (MEF), Form FS-F-3252 (See Figure 1) per SSOP-0002.

7.1.2 Obtain a Radiation Work Permit to establish radiological controls.

7.1.3 Check drum for deterioration.

7.1.3.1 If drum is deteriorated, place drum in an overpack per SOP 20-C-600 or position a Griflon bag, or equivalent, over drum and fasten.

7.1.3.2 Move deteriorated drums to a staging area near Plant 1 sample line.

7.1.4 Using the scale specified by the supervisor, perform a scale check per SOP 1-C-904.

NOTE: The supervisor shall specify an IRS&T approved barrel grab/lifting device to be used.

7.1.5 Inspect the barrel grab for damage.

CAUTION: DO NOT USE DAMAGED BARREL GRAB.

7.1.5.1 If the barrel grab is damaged, notify supervisor of damage.

7.1.6 Inspect forklift (used with barrel grab) per SOP 20-C-902.

7.1.7 Using barrel grab attached to forklift, move the drum onto the scale.

7.1.8 Obtain the gross weight of the drum.

> WARNING: MAXIMUM WEIGHT OF DRUMS SHALL BE 700 POUNDS FOR A 30 GALLON OVERPACK; 1,200 POUNDS FOR 55 GALLON OVERPACKS, 55 GALLON SINGLEPACK, AND 85 GALLON OVERPACKS. MAXIMUM WEIGHT OF 85 GALLON SINGLEPACKS SHALL BE 1,000 POUNDS.

7.1.8.1 If drum weight exceeds maximum weight, remove material until weight requirement is met placing the additional material in a designated/labeled container.

7.0 PROCEDURE (cont.)

7.1.9 Using the barrel grab, move drum from scale to ventilated sampling station.

> **WARNING: SAMPLING STATION SHALL NOT BE OPERATED IF THE VFI READING IS LESS THAN THE POSTED PRESSURE.**

7.1.10 Check the Ventilation Flow Indicator per SOP 20-C-905 to ensure the sampling station ventilation system is in operation.

> **WARNING: BUNG(S) AND LID(S) SHALL BE REMOVED SLOWLY TO RELEASE POSSIBLE PRESSURE.**

7.1.11 Slowly remove lock ring and lid from the drum.

7.1.12 Obtain sample of material per SOP 1-C-101 for a RCRA/Non-RCRA determination and analysis to determine major radionuclides and other suspected nuclides.

7.1.13 Visually inspect drum per items listed on the "Package Physical Certification" section of the "Item Production/Certification/ Identification" (65 card), Form FMPC-CONT-1945-XX (See Figure 2). Indicate inspection condition on card.

7.1.13.1 If 1/2 inch or more of free standing liquid is present on the top of the material, move the drum to the designated holding area for additional processing.

NOTE: The amount of absorbent material added shall be a minimum quantity of twice the calculated volume of liquid.

NOTE: If material is suspected of being hazardous, absorbent shall not be added until material has been characterized.

7.1.13.2 If less than 1/2 inch of free standing liquid is present on the top of the material, add uncalcined diatomaceous earth to absorb the liquid.

7.1.13.3 If material is dry, loose and respirable, request analysis for particulate size and notify supervisor.

7.0 PROCEDURE (cont.)

7.1.14 When the visual inspection and sampling operation are completed, install lock ring and lid on drum and place drum in designated holding area as directed by supervision until the RCRA determination and analysis results are received.

7.1.14.1 If the analysis results identify material as RCRA, complete the required forms and package per SOP 20-C-615.

7.1.14.2 If RCRA determination is negative, proceed to Step 7.1.15 and forward copy of lab analysis to Waste Management central files.

7.1.15 Complete the 65 card per analysis results.

7.1.16 Install seal on lever ring and record seal number on 65 card.

7.1.17 Place drum in the applicable overpack per SOP 20-C-600.

7.2 Inspecting and Evaluating Containerized LLRW at Storage Areas

7.2.1 Obtain a Radiation Work Permit to establish radiological controls.

7.2.2 Place container in designated inspection area.

7.2.2.1 If container lid is to be removed outside of ventilated enclosed area, request an inspection for organic vapor from IRS&T to ensure respiratory protection is adequate.

7.2.3 Remove container lid.

7.2.4 Obtain sample of material per SOP 1-C-101 and request a RCRA determination (TCLP) and analysis to detect major radionuclides.

7.2.5 Visually inspect container per items listed on the "Package Physical Certification" section of the "Item Production/Certification/ Identification" card, Form FMPC-CONT-1945-XX. Indicate inspection condition on card.

7.2.5.1 If 1/2 inch or more of free standing liquid is present on the top of the material, move the drum to the designated holding area for additional processing.

7.0 PROCEDURE (cont.)

NOTE: If material is suspected of being hazardous, absorbent shall not be added until material has been characterized.

NOTE: The amount of absorbent material added shall be a minimum quarterly of twice the calculated volume of liquid.

7.2.5.2 If less than 1/2 inch of free standing liquid is present on the top of the material, add uncalcined diatomaceous earth to absorb the liquid.

7.2.5.3 If material is dry, loose, and respirable, request analysis for particulate size and notify supervisor.

7.2.5.4 If an excessive void space is present, add additional material per SSOP-0024.

7.2.6 When the visual inspection and sampling operation are complete, replace lid on container per SOP 1-C-602 and place container in designated holding area as directed by supervision until analysis results are received.

7.2.6.1 If the analysis results identify material as RCRA, complete the required forms and package per SOP 20-C-615.

7.2.6.2 If RCRA determination is negative, proceed to Step 7.2.7 and forward copy of lab analysis to Waste Management central files.

7.2.7 Complete the "Item Production/Certification/Identification" card, Form FMPC-CONT-1945-XX (See Figure 2) per analysis results.

7.2.8 Move container to a designated holding area for shipment preparation.

8.0 APPLICABLE FORMS

8.1 FMPC-CONT-1945-XX, "Item Production/Certification/Identification"

8.2 FS-F-3252, "Material Evaluation Form"

Fernald Site
MATERIAL EVALUATION FORM

MEF NO _____

MEF REV. NO _____

SECTION I - MATERIAL GENERATOR

1. FEMP SRC | MTC
2. PLANT AND/OR BULDING NO
3. PROCESS AREA
4. EQUIPMENT NAME(S)
5. MEF NO DATE | MEF REV DATE
6. MATERIAL PHYSICAL STATE: ☐ Liquid ☐ Gas ☐ Wet Solid (Sludge) ☐ Dry Solid
7. APPROXIMATE NET WEIGHT OF FULL CONTAINER? ☐ <100 lbs ☐ 100 to 1000 lbs ☐ >1000 lbs
8. DOES MATERIAL CONSIST OF MORE THAN ONE SUBSTANCE? ☐ YES ☐ NO
9. IS MATERIAL A WASTE? ☐ YES ☐ NO
10. COMMON NAMES
11. CHEMICAL NAMES
12. COMMON CHEMICAL NAME SOURCE: ☐ Process Information ☐ MSDS ☐ Container Label ☐ FEMP Lot Code | OTHER
13. SIMILAR MATERIAL NAME
14. SIMILAR MATERIAL LOT CODE(S):
15. SUBSTANCES SUSPECTED

☐ Aerosols	☐ Cresol	☐ Endrine	☐ Methylene Chloride	☐ TBP Kerosene
☐ Arsenic	☐ m-Cresol	☐ Heptachlor	☐ Motor Engine Oil	☐ Tetrachloroethylene
☐ Barium	☐ o-Cresol	☐ Hexachlorobenzene	☐ Nitrobenzene	☐ 1,1,1-Trichloroethane
☐ Benzene	☐ p-Cresol	☐ Hexachloroethane	☐ Other Organics	☐ 2,4,5-TP (Silvex)
☐ Cadmium	☐ 2,4-D	☐ Hexachloro-1,3-butadiene	☐ Paint Stripper	☐ 2,4,5-Trichlorophenol
☐ Carbon Tetrachloride	☐ Degreaser	☐ Hydraulic Oil	☐ Paint Thinner/Mineral Spirits	☐ 2,4,6-Trichlorophenol
☐ Chlordane	☐ 1,4-Dichlorobenzene	☐ Iron	☐ Pentachlorophenol	☐ Toxaphene
☐ Chlorobenzene	☐ 1,2-Dichloroethane	☐ Lead	☐ Perchloroethylene	☐ Trichloroethylene
☐ Chloroform	☐ 1,1-Dichloroethylene	☐ Lindane	☐ Pyridine	☐ Unknown
☐ Chromium	☐ 2,4-Dinitrotoluene	☐ Mercury	☐ Selenium	☐ Vinyl Chloride
☐ Coolants	☐ Enamel	☐ Methoxychlor	☐ Silver	☐ Xylene
		☐ Methyl ethyl ketone	☐ Synthetic oil	☐ Oil

16. a. REASON FOR SUSPECTING ALL SUBSTANCES AND QUANTITY
16. b. SOURCE FOR REASON AND QUANTITY (Attach MSDS if Available)
☐ Personnel Interviews ☐ AEDO Log ☐ MSDS ☐ Prior Evaluation of Similar Material
☐ Historical Records ☐ Physical Evidence ☐ Container Label — What Material _____
☐ FEMP Lot Code ☐ Process Information ☐ Sump Report ☐ Soil Database — SRC _____ MTC _____
16. c. HEALTH AND SAFETY CONCERNS REQUIREMENTS
16. d. SIGNATURE AND DATE
17. HAS THE "FINGERPRINT" VISUAL INSPECTION BEEN COMPLETED? ☐ YES ☐ NO
18. NUMBER OF PHASES
19. pH (IF KNOWN) (Attach Lab Results)
20. FLASH POINT (IF KNOWN) (Attach Lab Results)
21. HAS A PAINT FILTER TEST BEEN COMPLETED? ☐ YES ☐ NO
22. IS IT REACTIVE? ☐ YES ☐ NO | EXPLAIN
23. IS IT IGNITABLE? ☐ YES ☐ NO | EXPLAIN
24. OTHER INFORMATION (Example: Is the Material a Product or Waste?)
25. ADDITIONAL SOURCES OF INFORMATION
26. PRIMARY CONTACT INDIVIDUAL | EXTENSION | DATE COMPLETED

NOTE: Form shall be completed using ink or a typewriter
NOTE: Only WEMCO employees shall sign this form

(Continued on Reverse)

FS-F-3252 (Rev. 10/89) Sheet 1

MATERIAL EVALUATION FORM
FS-F-3252
Figure 1 (Page 1 of 2)

Fernald Site
MATERIAL EVALUATION FORM
(Continued)

MEF NO. _____
MEF REV NO. _____

SECTION II - FACILITY AND MATERIALS EVALUATION

1. IS MATERIAL A WASTE? ☐ YES ☐ NO
2. IS IT EXCLUDED UNDER 261.4(a)? ☐ YES ☐ NO
3. IS IT EXCLUDED UNDER 261.4 (b)? ☐ YES ☐ NO
4. DOES IT CONTAIN LISTED WASTE AS PER 261 SUBPART D? ☐ a ___ ☐ ___ ☐ D ___ ☐ J ___ ☐ not listed
5. DOES IT EXHIBIT ANY CHARACTERISTICS AS PER 261 SUBPART C? ☐ YES ☐ NO — EXPLAIN
6. IS IT A RQ HAZARDOUS SUBSTANCE? ☐ YES ☐ NO — POUNDS
7. CLASSIFICATION AS A WASTE ☐ Needs Further Action (no sampling) ☐ RCRA Hazardous Waste ☐ Source Exempt ☐ Non-RCRA Waste ☐ Radioactive — EXPLAIN: _____
8. PRIMARY BASIS FOR CLASSIFICATION ☐ Generator Information ☐ Prior material evaluation — WHAT MATERIAL? _____ LOT NUMBER _____
9. IS IT SUBJECT TO LAND BAN RESTRICTIONS? ☐ NO ☐ YES Effective Date _____
10. DISTRIBUTE PER SECTION IV, ITEM 9
11. OTHER INFORMATION SOURCES USED
12. PRIMARY CONTACT INDIVIDUAL — EXTENSION — DATE COMPLETED
13. IS SAMPLING REQUIRED? ☐ YES ☐ NO
14. IS TRANSFER TO CONTROLLED HOLDING AREA REQUIRED? ☐ YES ☐ NO — DATE
15. INFORMATION ACTION COMPLETION DATE
16. HEALTH AND SAFETY CONCERNS REQUIREMENTS
16. B SIGNATURE AND DATE

SECTION III - ENVIRONMENTAL ENGINEERING

1. RECOMMENDED STORAGE CONTAINER MATERIAL ☐ Carbon Steel ☐ Stainless Steel ☐ Polyethylene ☐ Other _____
2. APPLICABLE REACTIVITY GROUP CODES ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐ H
3. OTHER INFORMATION SOURCES USED
4. PRIMARY CONTACT INDIVIDUAL — EXTENSION — DATE COMPLETED

SECTION IV - TOXIC AND SOLID WASTE PROGRAMS

1. PROPER D.O.T. SHIPPING NAME
2. D.O.T. HAZARD CLASS
3. REQUIRED LABELS
4. D.O.T. IDENTIFICATION NO ☐ UN ☐ NA — SUFFIX
5. EPA WASTE NO
6. APPLICABLE REACTIVITY GROUP CODES (COPY FROM SECTION III, ITEM 2)
7. FEMP SRC AND MTC (COPY FROM SECTION I, ITEM 1) — SRC — MTC
8. IS A REVISION TO MEF REQUIRED? ☐ YES ☐ NO
9. DISTRIBUTION

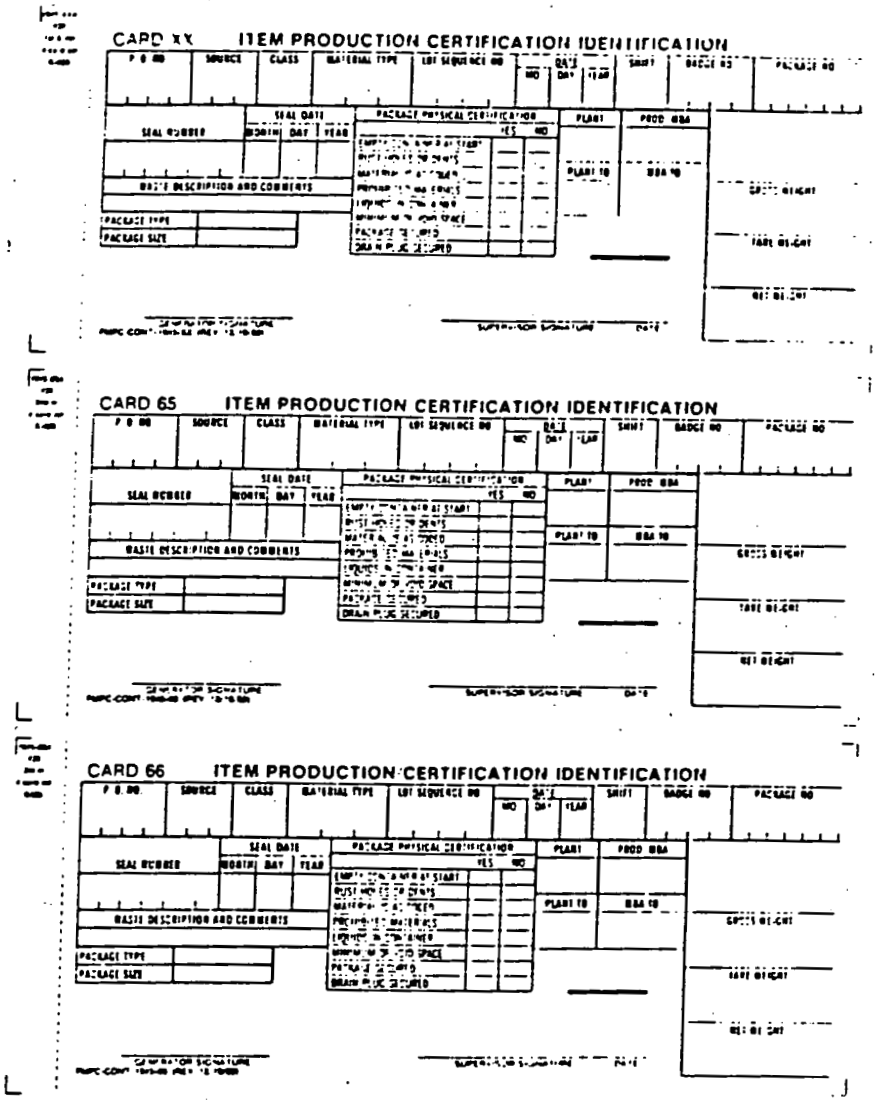
	DATE
MATERIAL GENERATOR	
ENVIRONMENTAL ENGINEERING	
ENVIRONMENTAL MONITORING	
MC&A	
IRS&T	
FACILITIES AND WAREHOUSING	
FBME	
CONTROLLED HOLDING AREA	

10. PRIMARY CONTACT INDIVIDUAL — EXTENSION — DATE COMPLETED

FS-F 3252 REV 10/10/91 Sheet 2

COPY

MATERIAL EVALUATION FORM
FS-F-3252
Figure 1 (Page 2 of 2)



ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION
FMPC-CONT-1945-XX
Figure 2

SITE SERVICES PROCEDURE	INSPECTION AND EVALUATION OF CONTAINERIZED LOW-LEVEL RADIOACTIVE WASTE (LLRW)	SOP 1-C-604 AREA: As Applicable
Authorization: R. L. Gardner, Facilities and Warehousing	Supersedes: 1-C-604, 09-07-89	Issue Date: 12/05/91

RECORD OF ISSUE/REVISIONS

DATE	REV. NO	DESCRIPTION AND AUTHORITY
09-07-89	0	Procedure required to replace CIO C88-175 per Request No. P89-097.
12-05-91	0	Reissued to include sampling requirements for RCRA determination and change applicability to low-level radioactive waste per Request No. P89-461, initiated by K. Dunbar.

STEP 2.

196A

1.0 PURPOSE

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.

2.0 APPLICABILITY

This procedure is applicable to the methods and equipment for preparing and taking samples of dry, moist, and liquid materials by Waste Management.

3.0 RESPONSIBILITIES

3.1 Supervisors shall be responsible for the following:

3.1.1 Contacting Industrial Hygiene or Radiological Safety to determine the appropriate respiratory protection for the process being performed.

3.1.2 Providing operators with the required respiratory protection.

3.1.3 Ensuring that only trained personnel take samples.

3.1.4 Reporting exceptional circumstances not addressed by this SOP in a Minor Event Report (refer to FMPC-704) and notifying the AEDO of the circumstances.

3.2 Operators shall be responsible for complying with this procedure and reporting any unusual occurrences to the supervisor or, in the supervisor's absence, the Assistant Emergency Duty Officer (AEDO).

3.3 Radiological Safety shall be responsible for furnishing a copy of P-35-013 with a "Radiation Work Permit" when sampling Plutonium Out of Specification (POOS) material.

3.4 Waste Technology shall be responsible for the preparation of RCRA or suspect RCRA sampling plans, hazardous waste determination, and homogeneous determinations on an individual basis in accordance with required EPA sampling test methods.

3.5 Solid Waste Compliance shall be responsible for hazardous waste determination.

4.0 DEFINITIONS

4.1 DELETED

4.0 DEFINITIONS (cont.)

4.2 DELETED

4.3 DELETED

4.4 DELETED

5.0 REFERENCES

5.1 1-C-701, "Plant 1 Dust Collectors"

5.2 1-C-904, "Operator Scale Checking in Plant 1"

5.3 20-C-601, "Packaging Low Level Waste for Offsite Disposal"

5.4 20-C-605, "Hazardous Waste Satellite Accumulation Areas"

5.5 20-C-905, "Ventilation Flow Indicators (VFI)"

5.6 FMPC-2178, "FMPC Lot Marking and Color-Coding System"

5.7 DELETED.

5.8 SOP 20-C-101, "Moving and Storing Nuclear Materials on Site at the FMPC"

5.9 SOP 20-C-102, "Nuclear Safety for Receiving, Storing, Repackaging, and Moving Enriched Uranium Materials <20% ^{235}U from Offsite"

5.10 SOP 20-C-904, "General Nuclear Safety Requirements"

R 5.11 SOP 20-C-606, "Hazardous Material Spill Clean-Up"

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS

6.1 A defined safety system is not involved.

6.2 Operators shall wear respiratory protection provided by the supervisor when dusty conditions exist.

6.3 Leather-palm gloves shall be worn when handling drums, locking rings, lids, sharp or abrasive material, or when using tools.

6.4 Face shields and neoprene gloves and aprons shall be worn when taking sampl of caustic material, acid slurries, or liquids.

R - MATERIAL REVISED, ADDED, OR DELETED.

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS (cont.)

6.5 Drums with noticeable bulging shall be opened under the direction of the supervisor and Safety and Fire Protection Engineering.

6.6 Protective equipment as directed by IS&H shall be worn when handling or sampling drums that are corroded, rusted, bulging, or deformed.

6.7 Material in damaged drums shall be placed in another correctly identified container.

R 6.8 Any release of hazardous waste shall be reported and handled immediately per
R SOP 20-C-606.

6.9 Dust Collector G2-172 shall be turned on during the sampling operation at the Plant 1 sample line.

6.10 If POOS material is to be sampled, contact Radiological Safety.

6.11 Material shall be handled per the requirements of SOP 20-C-101, 20-C-102, and 20-C-904.

6.12 Any circumstance which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake to Radiological Safety for evaluation. The involved employees shall report to Medical Services at the end of their shift or as directed to submit a urine sample and again report at the start of their next shift to submit another urine sample. The supervisor shall consider the circumstances to be a minor event and shall immediately complete a minor Event Report per FMPC-704 and notify the AEDO of the circumstance.

6.13 Gloves shall be leak-checked prior to use.

6.14 A Radiation Work Permit shall be obtained prior to performing any sampling operation.

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7.0 PROCEDURE

NOTE: A sampling plan, as required by EPA Document EPA SW-846, shall be prepared prior to sampling a hazardous waste or suspect hazardous waste stream.

NOTE: Any sample collected for hazardous waste or residue material taken for verification of hazardous waste determination shall follow strict chain of custody guidelines in accordance with 7.12.

NOTE: Any deviation from procedure shall be documented on a "Sampling Deviation/Special Handling Requirements", Form FMPC-PRO-3130 (See Figure 1).

NOTE: DELETED.

NOTE: When sampling a material for hazardous waste determination, a "clean" sampler must be used (Refer to Section 7.9).

7.1 Preparation for Sampling

7.1.1 At the start of the operating shift, check the scales to be used per SOP 1-C-904.

7.1.2 Move skids of material into the sampling area.

7.1.3 Prepare a composite sample drum.

7.1.3.1 Tare weigh an empty, clean, color-coded 30-gallon drum. Stencil the tare weight and the lot marking number on the drum (Refer to "FMPC Lot Marking and Color-Coding System").

NOTE: The composite sample container shall be large enough to hold the entire composite sample. Use a larger container if necessary.

7.1.4 If the drum to be sampled was received from offsite, printweigh the drum per Item 7.2.

7.1.5 Remove the locking ring and drum lid from the drum to be sampled.

NOTE: To prevent contamination of the sample, only one drum at a time shall be open.

7.1.6 Visually inspect the waste material to be sampled to determine the physic characteristics (liquid, solid, dry, moist).

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7.0 PROCEDURE (cont.)

7.1.7 Select and obtain a clean sampler for the type of material to be sampled per recommendation of Table 1.

7.1.7.1 If assistance is required in determining the physical characteristics of the waste or the type of sampler to be used, contact Waste Technology.

NOTE: Clean samplers shall have a completed "Clean Equipment" tag affixed to the sampler and be sealed in plastic bags or tubes.

7.1.8 Sample the material using the procedure for the type sampler (Refer to Table 1).

NOTE: The supervisor will supply sampling requirements for nuclear materials and for suspected RCRA material based on published sampling plans. Sampling may also be specified using an approved "Sampling Deviation/Special Handling Requirements", Form FMPC-PRO-3130 (See Figure 1).

7.1.9 Replace the drum lid and lock ring following sampling.

7.1.9.1 If the drum lid and lock ring are damaged, replace with a new lid and ring.

7.1.10 Repeat Steps 7.1.4, 7.1.5, 7.1.8, and 7.1.9 for each drum in the lot.

7.1.11 After the lot has been sampled, weigh the 30-gallon composite sample drum. Record the weight on a "Sample Weight Ticket", Form FMPC-PRO-1579 (See Figure 3).

7.1.12 Take a secondary sample from the composite sample drum (Refer to Item 7.7 and 7.8).

7.1.13 Place a clean lid and locking ring on the 30-gallon composite sample drum.

7.1.14 Using a forklift, load the sampled drums and the composite sample drum onto skids.

7.1.15 Move the skids to the storage area designated by the supervisor.

7.1.16 Clean and store the sampling instrument per Items 7.9 and 7.10.

7.1.17 Complete the "Sample Weight Ticket", Form FMPC-PRO-1579 (See Figure 3).

: - MATERIAL REVISED, ADDED, OR DELETED.

7.0 PROCEDURE (cont.)

7.1.18 Send the documentation as completed in Item 7.11 and the secondary sample to the laboratory.

7.1.18.1 If the Chain of Custody form is being used, deliver listed samples directly to the Laboratory.

NOTE: The operator obtaining the samples shall deliver the samples to the Laboratory without the use of Transportation personnel.

7.2 Completing the Container Printweigh Card

7.2.1 If the drum to be sampled contains material from offsite, printweigh the drum on a "Container Printweigh Card", Form FMPC-PRO-1342 (See Figure 2).

7.2.2 Check that the gross weight is printed in the "WEIGHT" column.

7.2.3 Enter the drum tare weight in the column marked "CODE".

NOTE: Tare weight is stencilled on the drum.

7.2.4 After lot sampling has been completed, printweigh the composite sample drum.

7.2.5 Calculate the net weight of the composite sample drum.

NOTE: The net weight is the difference between the weight after sampling and the tare weight.

7.2.6 For each composite sample container, complete a "Container Printweigh Card" as follows:

7.2.6.1 Enter the gross and net weight of the composite sample container.

7.2.6.2 In Box #1, enter the type of material sampled.

7.2.6.3 In Box #2, enter the 15-digit lot number.

7.2.6.4 In Box #3, enter the specific sampling method.

7.2.6.5 In Box #4, enter the tare weight.

7.2.6.6 In Box #5, enter the vendor lot marking number, if available.

- MATERIAL REVISED, ADDED, OR DELETED.

7.0 PROCEDURE (cont.)

7.2.6.7 In Box #6, enter the date and gross and net weights.

7.2.6.8 In Box #7, enter the date the sample was prepared.

7.2.6.9 In Box #10, enter the scale number.

7.2.6.10 In Box #13, enter the total number of containers (including the composite sample container).

7.2.6.11 In Box #15, enter when the sample was weighed.

7.2.6.12 In Box #16, enter the operator's name and badge number.

7.2.7 Affix the "Container Printweigh Card" to the composite sample drum.

7.2.8 DELETED.

7.2.9 DELETED.

7.2.10 DELETED.

7.3 Using the Automatic Closed Auger Sampler

7.3.1 After skids of material have been moved into the sampling area, place the drums on the Sampling Conveyor using a forklift.

7.3.2 Ensure Dust Collector G2-172 is in operation, and if not, start-up and operate per SOP 1-C-701.

NOTE: DELETED.

7.3.3 Check the Ventilation Flow Indicator (VFI) located on the auger enclosure. Notify supervisor and discontinue sampling if the VFI reads less than 2.2 inches differential (Refer to 20-C-905, "Ventilation Flow Indicators").

7.3.4 After the drum lid is removed, manually move the drum along the conveyor into the Auger Sampling Chamber.

7.3.5 Place the composite sample drum under the Sample Discharge Chute.

7.0 PROCEDURE (cont.)

7.3.6 Insert the auger sampler in the drum. Run the auger to the bottom of the drum.

NOTE: Vary the sampling location for each drum. Samples shall be taken from the center and off center points.

NOTE: Do not tilt the drum during sampling.

7.3.6.1 If the material type is different from that previously sampled (different lot, different material), take two samples from the first drum. Discard the samples to avoid cross contamination of samples.

NOTE: Use a separate container to collect the discarded samples. Discard samples can be returned to the drum after the drum has been sampled.

7.3.7 Withdraw the auger sampler.

NOTE: The auger sampler will automatically deposit the sample in the 30-gallon composite sample drum. Drum shall not be more than half filled to permit blending.

7.3.8 Check to ensure that the entire content of the auger was deposited in the sample container.

7.3.9 If specified by supervision, repeat Steps 7.3.9 thru 7.3.11 to take additional samples from other points in the drum.

7.3.10 When sampling is complete, move the drum along the conveyor to the lidding station.

7.3.11 Repeats steps 7.3.4 through 7.3.10 until all drums have been sampled.

7.4 Using the Grain Sampler

7.4.1 Ensure that the grain sampler is in the closed position with the slots in the outer tube face up.

7.4.2 Insert the sampler into the material being sampled.

NOTE: Insert the sampler at a point near the side of the container, through the center of the container, to a point opposite the entry point.

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7.0 PROCEDURE (cont.)

7.4.3 Rotate the inner tube of the sampler to the open position.

7.4.4 Wiggle the sampler a few times to ensure that material enters the open slots.

7.4.5 Rotate the inner tube of the sampler to the closed position.

7.4.6 Withdraw the sampler from the drum of material.

7.4.7 Place the sampler in a horizontal position with the slots in the outer tube facing up.

7.4.8 Rotate the inner tube to the open position.

7.4.9 Slide the inner tube out of the outer tube.

7.4.10 Place the sample in the appropriate sample container as specified in Table 2 for residues and Table 3 for RCRA or suspect RCRA material.

7.4.11 Lid the sample container while obtaining the next sample.

7.4.12 If specified by supervision, repeat Steps 7.4.1 thru 7.4.11 to take additional samples from other points in the drum.

7.4.13 After adequate samples have been taken, sample the next drum.

7.4.14 Repeat steps 7.4.1 thru 7.4.13 until all drums in the lot have been sampled.

7.5 Using the Pipe Sampler

NOTE: The pipe sampler shall be long enough to reach the bottom of the container being sampled.

7.5.1 Insert the pipe sampler diagonally through the contents of the drum.

7.5.2 Rotate the pipe sampler once or twice to cut a core of material.

7.5.3 Ensure that the slot is face up and slowly withdraw the pipe sampler.

7.5.4 Check to ensure that the entire length of pipe contains material. If not, repeat Steps 7.5.1 thru 7.5.3.

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7.0 PROCEDURE (cont.)

7.5.5 Using a clean stainless steel spatula, push the material out of the sampler into the appropriate sample container as specified in Table 2 for residues and Table 3 for RCRA or suspect RCRA material.

7.5.5.1 If an organic analysis is required, refer to Table 4 for the appropriate sample container.

7.5.6 Lid the sample container while obtaining the next sample.

7.5.7 If specified by supervision, repeat Steps 7.5.1 thru 7.5.6 to collect samples from other points in the drum.

7.5.8 Repeat Steps 7.5.1 thru 7.5.7 until all the drums in the lot have been sampled.

7.6 Using the Composite Liquid Waste Sampler (COLIWASA)

7.6.1 Using the Disposable COLIWASA

7.6.1.1 Adjust the locking mechanism, if necessary, to ensure that the neoprene rubber stopper provides a tight closure.

7.6.1.2 Place the stopper rod handle in the T-position.

7.6.1.3 Push the rod down until the handle is against the locking block.

7.6.1.4 Slowly lower the COLIWASA vertically into the drum.

NOTE: Lower the COLIWASA so that the levels of liquid inside and outside the sampler tube remain even. If the liquid level in the sampler tube is lower than the level outside the sampler, the rate is too fast and will result in a nonrepresentative sample.

7.6.1.5 When the stopper hits the bottom of the drum, push the sampler tube downward against the stopper to close the sampler.

7.6.1.6 Turn the T-handle upright with one end tight on the locking block to lock the sampler closed.

7.6.1.7 Slowly withdraw the sampler with one hand while wiping the outside of the sampler with a clean disposable cloth.

7.6.1.7.1 Dispose of absorbent cloths and trash bags which have not come in contact with RCRA, or suspected RCRA, waste per SOP 20-C-601.

7.0 PROCEDURE (cont.)

7.6.1.7.2 Dispose of absorbent cloths and trash bags which have come in contact with RCRA, or suspected RCRA, waste per SOP 20-C-605.

7.6.1.8 Place the end of the COLIWASA into the appropriate composite sample container (Refer to Table 3).

7.6.1.8.1 If an organic analysis is required, complete Step 7.13.1 through Step 7.13.3 (Refer to Table 4 for appropriate sample container).

NOTE: Waste Technology shall determine if an organic analysis is required per the Sampling Plan.

7.6.1.9 Empty the sampler by slowly pulling the lower end of the T-handle away from the locking block.

7.6.1.10 If specified by supervision, repeat Steps 7.6.1.2 through 7.6.1.9 to collect samples from other points in the drum.

7.6.1.11 After changing drums, repeat Steps 7.6.1.2 through 7.6.1.10 until all the drums in the lot have been sampled.

7.6.2 Using the Glass COLIWASA

7.6.2.1 Check to ensure that the inner tubing and the outer sheath are not cracked.

7.6.2.2 Insert the inner tubing inside the sheath.

7.6.2.3 Raise the ground glass and the tubing several inches above the hole in the bottom of the sheath.

7.6.2.4 Slowly lower the COLIWASA vertically into the drum, keeping the ground glass end away from the hole in the bottom of the sheath.

NOTE: Lower the COLIWASA so that the levels of liquid inside and outside the sampler tube remain even. If the liquid level in the sampler tube is lower than the level outside the sampler, the rate is too fast and will result in a nonrepresentative sample.

7.0 PROCEDURE (cont.)

7.6.2.5 When the sheath hits the bottom of the drum, push the inner tube downward so that the ground glass end seals the end of the sheath.

7.6.2.6 Slowly withdraw the COLIWASA sampler with one hand ensuring the ground glass end is sealed against the tube bottom while wiping the outside of the sampler with a clean disposable cloth.

7.6.2.6.1 Dispose of absorbent cloths and trash bags which have not come in contact with RCRA, or suspected RCRA, waste per SOP 20-C-601.

7.6.2.6.2 Dispose of absorbent cloths and trash bags which have come in contact with RCRA, or suspected RCRA, waste per SOP 20-C-605.

7.6.2.7 Place the end of the COLIWASA into the appropriate composite sample container (Refer to Table 3).

7.6.2.7.1 If an organic analysis is required, complete steps 7.13.1 through 7.13.3 (refer to Table 4 for appropriate sample container).

NOTE: Waste Technology shall determine if an organic analysis is required per the Sampling Plan.

7.6.2.8 Empty the sampler by pulling the inner tube upward causing the ground glass end to separate from the outer tube bottom.

7.6.2.9 If specified by supervision, repeat Steps 7.6.2.2 through 7.6.2.8 to collect samples from other points in the drum.

7.6.2.10 After changing drums, repeat Steps 7.6.2.2 through 7.6.2.9 until all the drums in the lot have been sampled.

7.7 Collecting Secondary Samples of Dry Materials

7.7.1 Place the composite sample container on its side on the drum roller.

7.7.2 Set the drum roller timer for five minutes.

7.7.3 Turn on the drum roller.

7.7.4 Mix for five minutes and turn off the drum roller.

7.7.5 Place the drum in an upright position for five minutes to allow dust to settle.

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7.0 PROCEDURE (cont.)

7.7.6 Tare weigh a clean sample jar on the scale.

7.7.7 Remove the locking ring and lid from the composite sample container.

7.7.8 Using a clean grain sampler (Refer to Item 7.4), take a sample from the container.

7.7.9 Place the sample in the appropriate sample container (Refer to Table 2 or Table 3).

7.7.10 Repeat Steps 7.7.8 and 7.7.9 to collect samples from other points in the drum until an amount specified by supervision is collected.

NOTE: A minimum of two sample points is required.

7.7.11 Cap the sample jar after obtaining the secondary sample.

NOTE: No preservatives or other substances shall be added to the sample without the prior consent of the Analytical Laboratory.

7.7.12 Weigh the sample jar.

7.7.13 Complete the required records (Refer to Item 7.11).

7.7.14 Deliver the sample and completed documents to the Analytical Laboratory sample receiving room.

NOTE: All RCRA or suspected RCRA samples shall be delivered during the same shift in which they were collected.

7.7.14.1 If the Chain of Custody form is being used, deliver listed samples directly to the Laboratory.

NOTE: The operator obtaining the samples shall deliver the samples to the Laboratory without the use of Transportation personnel.

7.8 Collecting Secondary Samples - Moist or Sticky Materials

7.8.1 Tare weigh an appropriate sample jar (Refer to Table 2 or Table 3).

7.8.2 Open the composite sample container.

7.8.3 Using a pipe sampler, take a sample from the container per Steps 7.5.3 thru 7.5.5.

7.0 PROCEDURE (cont.)

7.8.4 Using a stainless steel spatula, push the sample out of the pipe into a clean five gallon can.

7.8.5 Repeat Steps 7.8.3 and 7.8.4 to collect four more samples.

NOTE: For the remaining samples, insert the pipe sampler at different points at the side of the container.

7.8.6 Blend the five core samples using the stainless steel spatula.

7.8.7 Using the stainless steel spatula, take five equal portions from different areas of the blend and place the portions in the appropriate sample container (Refer to Table 2 or Table 3).

NOTE: Sampling shall continue until an amount specified by supervision is collected.

NOTE: No preservatives or other substances shall be added to the samples without the prior consent of the Analytical Laboratory.

7.8.8 Place the unused secondary sample in the primary composite sample container and return the container to the lot.

7.8.9 Complete the required records (Refer to Item 7.11).

7.8.10 Deliver the sample and completed documents to the Analytical Laboratory sample receiving room.

NOTE: All samples shall be delivered during the same shift in which they were collected.

7.8.10.1 If the Chain of Custody form is being used, deliver listed samples directly to the Laboratory.

NOTE: The operator obtaining the samples shall deliver the samples to the Laboratory without the use of Transportation personnel.

7.0 PROCEDURE (cont.)

7.9 Cleaning Sampling Equipment

NOTE: This cleaning procedure is not applicable to the automatic closed auger sampler.

NOTE: Cleaning shall be performed over a container marked with the appropriate 15-digit FMPC Lot Markings.

7.9.1 Using a warm detergent solution, wash sampling equipment thoroughly. Use a bottle brush to remove particulate matter, films, or other dirt as necessary.

CAUTION: THE LID SHALL BE KEPT ON THE DRUM CONTAINING THE USED RINSE SOLUTION WHEN NOT IN USE.

NOTE: Alquinox or Liquinox may be used as the cleaning detergent.

NOTE: Only non wire-wrapped brushes shall be used.

7.9.2 Rinse the sampler several times with tap water to remove detergent residues.

7.9.2.1 When the rinse container is full, process the contents as RCRA waste per SOP 20-C-605.

NOTE: The solution accumulated from rinsing the sampling equipment shall not be mixed except when directed by the supervisor.

7.9.3 Rinse the sampler with distilled water.

7.9.4 Drain excess water off the sampler.

7.9.5 Rinse the sampler with pesticide grade purity isopropanol and, if necessary, dry with clean dry cloth.

NOTE: Pesticide grade purity isopropanol is isopropanol that is below laboratory grade purity isopropanol.

7.9.6 Place the clean sampler into a clean plastic bag or wrap with aluminum foil.

7.9.7 Dispose of absorbent cloths and trash bags which have not come in contact with RCRA waste or suspected RCRA waste per SOP 20-C-601.

7.0 PROCEDURE (cont.)

7.9.8 Dispose of absorbent cloths and trash bags which have come in contact with RCRA waste or suspected RCRA waste per SOP 20-C-605.

7.9.9 Fill out and attach a "Clean Equipment" tag to sampler, Form No. FMPC-PRO-3128, (See Figure 4).

7.9.10 Store the sampler per item 7.10 unless the sampler is to be used immediately.

7.9.11 If directed by the supervisor, obtain a sample of the rinsate and forward to the Laboratory for analysis.

7.9.11.1 When an analysis is required, store rinsate container in a satellite accumulation container/area until the analysis results are received and disposition determined.

7.10 Storing Sampling Equipment

7.10.1 Place the clean samplers (except closed auger) in a clean polyethylene plastic bag or wrap with aluminum foil.

7.10.2 Seal the plastic bag with tape.

7.10.3 Place the samplers in a clean, protected area.

7.11 Record Requirements

NOTE: The following record requirements apply to all secondary samples collected by Plant 1 personnel.

NOTE: All data for RCRA or suspect RCRA materials shall be recorded in waterproof ink.

7.11.1 Record the following information on the "Enrichment Label", Form No. FMPC-PRO-306 M-145 (See Figure 6). Affix the completed label to the secondary sample container.

7.11.1.1 Sampling location.

7.11.1.2 Collector signature.

7.11.1.3 Type of material.

7.11.1.4 Type of sample.

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7.0 PROCEDURE (cont.)

7.11.1.5 Lot number of material sampled.

7.11.1.6 Date sampled.

7.11.1.7 Time sampled (AM/PM or military time).

7.11.1.8 Net weight of the secondary sample.

7.11.1.9 Isotopic range (enriched, depleted).

7.11.2 DELETED.

7.11.2.1 DELETED.

7.11.2.2 DELETED.

7.11.2.3 DELETED.

7.11.2.4 DELETED.

7.11.2.5 DELETED.

7.11.2.6 DELETED.

7.11.2 Complete a "Report of Chemical Analyses", Form FMPC-T-200 (See Figure 8).

NOTE: Supervision shall specify analyses required.

7.11.2.1 If a sampling plan is in effect, do not complete Form FMPC-T-200 for RCRA Sampling.

7.12 Chain of Custody For Hazardous Determination Samples

NOTE: Plant 1 personnel shall be notified of all lots requiring Chain of Custody documentation.

7.12.1 Fill out an "Analytical Laboratory Sample Seal," Form No. FMPC-ES&H-2774 (See Figure 9) with the sample collector's name and badge number, date and time the sample was collected, and the drum and lot numbers.

7.0 PROCEDURE (cont.)

7.12.2 Place the sample seal over the lid of the sample container.

NOTE: Tamper guard tape may be used if a sample seal is not available.

NOTE: The sample seal (or tamper guard tape) shall be attached so that the seal will break when the sample container is opened.

NOTE: Each container must be sealed immediately after sample is collected and labeled using waterproof ink.

7.12.3 Ensure that record requirements (Refer to Item 7.11) are complete.

7.12.4 Complete the "Chain of Custody" sheet, Form No. FMPC-PRO-3112 (See Figure 10).

7.12.4.1 If the material is being sampled according to a sampling plan, write "See Sampling Plan No. XXXX" under "Analyses Requested" on the form.

NOTE: The "Chain of Custody" sheet shall be signed each time physical control of the samples is transferred.

NOTE: More than one sample can be included on the custody form. When more than one form is required for a large shipment, each form shall be completed entirely.

7.12.5 DELETED.

7.12.6 Record the following information in the "Field Log Book".

NOTE: Log entries shall be recorded using waterproof ink in a written manner which can be easily read and understood.

NOTE: The log book shall be protected and kept in a safe place.

7.12.6.1 Purpose of sampling (RCRA determination, MC&A sampling).

7.12.6.2 Location of sampling.

7.12.6.3 Name of field contact (person responsible for answering questions concerning the sample).

7.12.6.4 Generator of waste and address (if different from location).

7.12.6.5 Type of process producing waste (if known).

7.0 PROCEDURE (cont.)

7.12.6.6 Type of waste.

7.12.6.7 Declared/suspected waste components and concentrations.

7.12.6.8 Number and volume of sample taken.

7.12.6.9 Description of sampling point.

7.12.6.10 Date and time of collection.

7.12.6.11 Sample collector sample identification number(s).

7.12.6.12 Type of container the sample was taken from.

7.12.6.13 Drum inventory number (if available) as specified by MC&A (unique 4-digit number stenciled in white on the side of the waste drum).

7.12.6.14 FMPC lot marking system number.

7.12.6.15 Drum number (if available)

7.12.6.16 All other numbers on the drum(s).

7.12.6.17 Any written information on the drum describing the material contained in the drum.

7.12.6.18 Sampling method used.

7.12.6.19 Material description as observed by the collector.

7.12.6.20 Preservatives used.

NOTE: No preservatives or other substances shall be added to the samples without the prior consent of the Analytical Laboratory.

7.12.6.21 Any field measurements made, such as pH.

7.12.6.22 Signature of person recording the data.

7.12.7 Deliver the sample and completed documents to the Analytical Laboratory sample receiving room.

NOTE: All samples shall be delivered to the lab for analysis during the same shift in which the samples were collected.

7.0 PROCEDURE (cont.)

7.13 Liquid Organic Analysis

7.13.1 Carefully fill the septum bottle with the sample liquid.

NOTE: The liquid must reach the lip of the bottle.

7.13.2 Slide the teflon septum across the lip of the bottle covering the opening and then screw the plastic lid on the bottle.

7.13.3 Check the septum bottle for air bubbles by turning the bottle upside down.

NOTE: Organic analysis requires that no air bubbles be present in the septum bottle.

7.13.3.1 If air bubbles are present, empty the bottle and repeat steps 7.13.1 through 7.13.3 until the air bubbles are not present.

8.0 APPLICABLE FORMS

8.1 FMPC-PRO-3130, "Sampling Deviation/Special Handling Requirements"

8.2 FMPC-PRO-1342, "Container Printweigh Card"

8.3 FMPC-PRO-1579, "Sample Weight Ticket"

8.4 FMPC-PRO-3128, "Clean Equipment"

8.5 DELETED.

8.6 FMPC-PRO-306 M-145, "Enrichment Label"

8.7 DELETED.

8.8 FMPC-T-200, "Report of Chemical Analyses"

8.9 FMPC-OS&H-2774, "Sample Seal"

8.10 FMPC-PRO-3112, "Chain of Custody"

8.11 DELETED.

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TABLE 1

SAMPLERS

MATERIAL	SAMPLER	PROCEDURE ITEM NUMBER
Dry, compacted solids	Auger	7.3
Dry, fluffy, solids	Grain	7.4
Moist solids	Pipe	7.5
Liquids, sludges	COLIWASA	7.6

TABLE 2

SAMPLE CONTAINERS FOR RESIDUE SAMPLING

SAMPLER	TYPE OF SAMPLE CONTAINER
Auger	Glass or plastic
Grain	Glass or plastic
Pipe	Glass or plastic

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TABLE 3

SAMPLE CONTAINERS FOR RCRA OR RCRA SUSPECT SAMPLING

SAMPLER	TYPE OF SAMPLE CONTAINER
Grain	Shatterproof glass bottle with teflon cap liner
Pipe	Shatterproof glass bottle with teflon cap liner
Coliwasa	Shatterproof glass bottle with teflon cap liner

TABLE 4

SPECIAL SAMPLE CONTAINERS FOR ORGANIC ANALYSIS

SAMPLER	ANALYSIS	TYPE OF SAMPLE CONTAINER
Coliwasa	volatile	Septum Bottle (40 ml.)
Coliwasa	semi-volatile	Septum Bottle (40 ml.)
Pipe	volatile	Septum Bottle (40 ml.)
Pipe	semi-volatile	Septum Bottle (40 ml.)

R - MATERIAL REVISED, ADDED, OR DELETED.

FMPC WESTINGHOUSE MATERIALS COMPANY OF OHIO OPERATIONS DOCUMENT PROGRAM	Page 23 of 34 Revision No. 2	
RESTORATION PROCEDURE	SAMPLING RESIDUE AND WASTE MATERIALS	SOP 1-C-101 AREA: Plant 1
Authorization: (Signature on File) J. T. Grumski, Waste Management	Supersedes: 1-C-101, 06-29-72	Issue Date: 6-16-89

SAMPLING DEVIATION/SPECIAL HANDLING REQUIREMENTS

SAMPLING LOCATION: _____ DATE: _____

MATERIAL TYPE: _____ CONTAINER TYPE: _____

REASON FOR SAMPLING DEVIATION/SPECIAL HANDLING:

_____

_____

_____

_____

_____

_____

OUTLINE OF SPECIAL REQUIREMENTS:

_____

_____

_____

_____

_____

_____

_____

APPROVALS:

_____ MC&A Representative

_____ Solid Waste Compliance Representative

_____ Waste Operations Supervisor

_____ Cognizant Engineer

SAMPLING DEVIATION/SPECIAL HANDLING REQUIREMENTS
FMPC-PRO-3130
Figure 1

R - MATERIAL REVISED, ADDED, OR DELETED.

FMPC-PRO-1342 (REV. 2/5/87)

PRODUCTION RECORDS - PLANT 1

CONTAINER PRINTWEIGH CARD

WO	CODE	WEIGHT	CONTR. NO.
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

1. MATERIAL TYPE:

2. FMPC LOT NO.:

3. SAMPLING METHOD (CHECK ONE): (P) ☐ PIPE (A) ☐ Auger (S) ☐ System

4. TARE WEIGHT SOURCE (CHECK ONE): (V) ☐ Vendor (F) ☐ FMPC (X) ☐ Stat. Sample ____ -lbs.

5. VENDOR LOT NO.:

WEIGHED: Date: ____ Gross ____ Tare ____

6. DATE OF MOISTURE DETERMINATION

7. DATE SAMPLE PREPARED:

8. SAMPLE AMOUNT TO VENDOR

9. SAMPLE AMOUNT TO VENDOR

10. SCALE NO.:

11. PLANT RPT. NO.:

12. MOISTURE CONTENT: — H_2O

POS. GUIDES

TEST SW 1 2 3 4 5 6 7 8 9 10 TEST 11 12 13 14 15 16 17 18 19 20

13. TOTAL NO. CONTRS.:

14. REPORT COPIES REQ.: ☐ 6 ☐ 12

15. WEIGHING INST.: ☐ Before Sample ☐ After Sample

16. OPERATOR'S NAME:

17. DATA VERIFIED BY:

NO	DISTRIBUTION OF COPIES
1	Tabulating Section
2	Production Records - Plant 1 (RECORD COPY)

Card No. ____ of ____

WO	CODE	WEIGHT	CONTR. NO.
SAMPLE WEIGHT			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

CODES: TD - Test Drum
SA - Scale Adjusted
CS - Changed Scales
R-SA - Reweigh-Scale Adjusted

CONTAINER PRINTWEIGH CARD
FMPC-PRO-1342
Figure 2

R - MATERIAL REVISED, ADDED, OR DELETED.

GROSS

TARE

NET

SAMPLING PLANT

SAMPLE WEIGHT TICKET

VENDOR:

LOT NO.: DATE:

CHECK (√) ☐ Partial ☐ Complete ☐ Sample Reject

	WEIGHT	
	Gross	
	Tare	
	Net	

RETURNED DRUM NO.:

PRO-1579 (9/4/59)

SAMPLE WEIGHT TICKET
FMPC-PRO-1579
Figure 3

R - MATERIAL REVISED, ADDED, OR DELETED.

CLEANED BY: _____

DATE: _____

Cleaned according to sop : _____

FMPC-OPR-3128 (6/22/89)

CLEAN EQUIPMENT
FMPC-PRO-3128
Figure 4

R - MATERIAL REVISED, ADDED, OR DELETED.

DELETED

DELETED
DELETED
Figure 5

R - MATERIAL REVISED, ADDED, OR DELETED.

FMPC-SAMPLE LABEL/RCRA MATERIAL-ENRICHED

SAMPLING LOCATION	DO NOT ENRICHMENT
COLLECTOR	
TYPE OF MATERIAL	
TYPE OF SAMPLE	
LOT NUMBER OR IDENT	
DATE / TIME / NET WT	

FMPC FORM 306 M-145 (REV 11-29-88)

ENRICHMENT LABEL
FMPC-PRO-306 M-145
Figure 6

R - MATERIAL REVISED, ADDED, OR DELETED.

DELETED

DELETED
DELETED
Figure 7

R - MATERIAL REVISED, ADDED, OR DELETED.

RT OF CHEMICAL ANALYSES

Write Firmly — Part 4 must be legible.)

FMPC-T-200 (REV 5/8/86)

Lab. Nos. _____

Lot No. _____

ses Requested _____

	LAB. NO.	IDENTIFICATION	ANALYTICAL DATA					
NO.								
PLED								
ED BY								
S								

DISTRIBUTION OF COPIES
- ator
- ra Copy
- uality Assurance
- a ytical (RECORD COPY)

Approved By _____ Date of Report _____

R - MATERIAL REVISED, ADDED, OR DELETED.

ANALYTICAL LABORATORY SAMPLE SEAL

Collector: _____
(SIGNATURE)

Date Collected: _____

Time Collected: _____ ☐ AM ☐ PM

Lot No.: _____

Drum No.: _____

FMPC-ES&H-2774 (3/18/87)

SAMPLE SEAL
FMPC-OS&H-2774
Figure 9

R - MATERIAL REVISED, ADDED, OR DELETED.

FMPC
PRODUCTION OPERATIONS
CHAIN-OF-CUSTODY RECORD

Request No. _____

Company's Name and Address: _____ Phone No.: _____ Carrier Way Bill No.: _____ Lab Destination _____

Name of Sampler(s): _____ Phone No.: _____ Badge No.: _____

SAMPLE NUMBER	SAMPLE LOCATION AND DESCRIPTION (Waste Type)	SAMPLED DATE	SAMPLED TIME	SAMPLE TYPE	CONTAINER TYPE	ANALYSES REQUESTED (please refer to last column)						SAMPLE COND ON RECEIPT

TYPES OF ANALYSES
1 Composite Analysis
2 Total U
3 Total Th
4 EP Toxicity
5 Isotopic
6 Th-228
7 Th-232
8 Ra-226
9 UnCorg Sample (U Concentration)
10 ThoCorg Sample (Th Concentration)
11 _____
12 _____
13 _____
14 _____
15 _____

Field Information: _____

Possible Sample Hazards: _____

SIGNATURES.

1. Relinquished By: _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By: _____
2. Relinquished By: _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By: _____
3. Relinquished By: _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By: _____
4. Relinquished By: _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By: _____

NO.	DISTRIBUTION OF COPIES
1	To Accompany Samples
2	Field Copy

CHAIN OF CUSTODY
FMPC-PRO-3112
Figure 10

R - MATERIAL REVISED, ADDED, OR DELETED.

DELETED

DELETED
DELETED
Figure 11

R - MATERIAL REVISED, ADDED, OR DELETED.

RECORD OF ISSUE/REVISIONS

DATE	REV NO.	DESCRIPTION AND AUTHORITY
06-29-72	N/A	SOP has been revised to detail secondary sampling of both dry and wet materials as well as primary sampling.
10-30-84	N/A	Corrections in format made to Industrial Health and Safety and Environmental paragraphs, no text change. Changes made by Quality Control Department.
10-30-84	N/A	Quality Control Department replacement pages. List of Effective Pages added.
10-14-85	N/A	General update of SOP to reflect current operations per SOP Change Request No. 1009, initiated by R. C. Dicken.
04-23-87	N/A	Revised to implement Chain of Custody requirements for hazardous waste sampling of stored inventories to meet EPA requirements. Section 3 added per Request No. P87-092, initiated by D. J. Carr.
06-16-89	N/A	Reissued to update and reformat per Request No. P89-320, initiated by B. L. Krupa.
07-11-90	1	Revised to update RCRA requirements and incorporate references to SOP 20-C-101, 20-C-102, and 20-C-904 per Request No. P90-017, initiated by B. Krupa/J. Angert and Request P90-162, initiated by J. Angert.
03-11-91	2	Revised to incorporate CIOs C90-056 and C90-057 per Request Nos. P90-340 and P90-342.

R - MATERIAL REVISED, ADDED, OR DELETED.

1.0 PURPOSE

The purpose of this document is to establish the procedure for sampling drummed waste.

2.0 APPLICABILITY

This procedure is applicable to taking samples of drummed waste material at drum sampling locations and Resource Conservation and Recovery Act (RCRA) facilities.

3.0 RESPONSIBILITIES

3.1 Supervisors shall be responsible for the following:

3.1.1 Contacting Industrial Hygiene and/or Radiological Safety to determine the appropriate respiratory protection for the process being performed.

3.1.2 Providing operators with the required respiratory protection.

3.1.3 Ensuring that personnel are qualified per the established training requirements identified by the Department/Staff Manager.

3.1.4 Reviewing applicable Material Safety Data Sheets (MSDS) with operators.

3.1.5 Obtaining and posting a "Radiation Work Permit."

3.1.6 Obtaining and posting a "Hazardous Material Permit."

3.1.7 Obtaining specific drum storage location(s) from MC&A.

3.1.8 Notifying Materials Control & Accountability (MC&A) prior to moving drums.

3.1.9 Notifying the Transportation representative to move the drums to a diked sampling area.

3.1.10 Notifying Radiological Safety prior to moving drums in and out of Radiological Zones.

3.2 Operators and Supervisors shall be responsible for complying with this procedure.

3.0 RESPONSIBILITIES (cont.)

3.3 Environmental Management (EM) shall be responsible for the following:

3.3.1 Preparing "Sampling Request" forms for RCRA or suspect RCRA materials.

3.3.2 Performing statistical analysis on data received from on-site and off-site laboratories.

3.3.3 Performing hazardous waste determination.

3.4 Materials Control and Accountability (MC&A) shall be responsible for the following:

3.4.1 Assigning a representative to areas where drums are being moved.

3.4.2 Furnishing material identification data.

3.5 Industrial, Radiological Safety & Training (IRS&T) shall be responsible for the following:

3.5.1 Monitoring vehicles and drums entering and exiting Radiological Zones.

3.5.2 Issuing Radiation Work Permits.

4.0 DEFINITIONS

4.1 Equipment Blank Sample - Specimens of analyte-free media poured over previously cleaned sample equipment and accompanies the actual samples to the laboratory.

4.2 Composite Sample - Specimen derived by combining equal numbers of random samples obtained from the same waste stream.

4.3 Multi-Phase - A material consisting of liquid and a solid in any combination of 2 or more.

4.4 Random Sample - A representative sample of waste material taken from a drum chosen from a group of drums that had equal probability of being selected.

4.5 Trip Blank - A specimen of deionized water that accompanies the sample to the laboratory.

4.0 **DEFINITIONS** (cont.)

4.6 Wash Water Blank Sample - A specimen of clean rinseate water that accompanies actual samples to the laboratory.

4.7 Contact Waste - Unwanted material that has come into contact with a RCRA Waste or Suspect RCRA Waste during sampling.

5.0 **REFERENCES**

5.1 SOP 20-C-605, "Establishment and Control of Satellite Accumulation Areas"

5.2 SOP 20-C-909, "Portable Ventilation Unit Operation"

5.3 SOP 20-C-912, "Checking Scale Operation"

5.4 SSOP-0018, "Processing Site Wide Analysis Request/Custody Record for Sample Control"

5.5 SSOP-0024, "Packaging of Low Level Radioactive Waste (L-LRW) for Off-Site Disposal"

6.0 **INDUSTRIAL HEALTH & SAFETY REQUIREMENTS**

6.1 A defined safety system is not involved.

6.2 Portable ventilation devices shall be used per SOP 20-C-909 when collecting samples from drums containing dry materials or volatile compounds.

6.3 Operators shall wear respiratory protection provided by the supervisor.

6.4 Leather-palm gloves shall be worn when handling drums, locking rings, lids, sharp or abrasive material, or when using tools.

6.5 Safety glasses shall be worn unless a full face respirator is used.

6.6 Face shields, neoprene gloves, aprons, and chemical cover goggles shall be worn when taking samples of caustic material, acid slurries, or liquids.

6.7 Gloves shall be leaked checked by water immersion prior to use. Leaking gloves or gloves contaminated on the inside shall be discarded.

6.8 Employees shall have reviewed, and be familiar with, the information contained in the MSDS for the chemical/hazardous materials that may be used or encountered.

6.0 INDUSTRIAL HEALTH & SAFETY REQUIREMENTS (cont.)

6.9 Specified personal protective equipment (PPE) (including booties), which are specified on Work Permits and this procedure, shall be worn before entering a sample area.

6.10 Personnel shall have access to communications devices and emergency response equipment.

6.11 Industrial Hygiene shall be contacted to measure volatile organic compounds for all drums classified as containing organic liquids. Results of monitoring along with personal protective equipment requirements shall be communicated to supervision on a "Hazardous Chemical Work Permit".

6.12 Fire and Safety Inspectors shall be contacted to check for flammable vapors from all drums classified as containing organic liquids. Flammable liquids identified by Fire and Safety shall only be sampled at the flammable liquid sampling line using explosion proof electrical equipment and non-sparking tools.

6.13 All persons will remain clear of aisle-ways while forklifts and handstackers are in use.

6.14 Any circumstance which could have resulted in an intake of radioactive materials by inhalation, ingestion, or absorption shall immediately be reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake to IRS&T Radiological Safety Section for evaluation. The involved personnel shall report to the Urine Sampling Station at the end of their shift to complete a Incident Investigation Report (IIR) (Form FMPC-ES&H-1458), and submit an incident urine sample. The involved personnel shall also report to the Urine Sampling Station at the start of their next shift to submit a followup urine sample.

7.0 PROCEDURE

7.1 General

7.1.1 Warnings, cautions, and notes precede the Item or Step to which they apply.

7.1.2 Any deviation from the Sampling Plan shall be noted in the "Sampling Log Book."

7.1.3 To prevent contamination, only one drum per sampling line shall be opened, unless a composite sample is required.

7.0 PROCEDURE (cont.)

7.1.4 Volatile organic compounds (VOC) and combustible materials being sampled or staged shall be segregated from other materials. See Item 6.11 for identification and sampling of flammable liquids.

7.1.5 When samples are requested for volatile organic analysis, the samples shall be taken and the sample container and drum closed and sealed as quickly as possible.

7.2 Preparation for Sampling

NOTE:- Contact supervisor if there are questions pertaining to the Sampling Request Form.

7.2.1 Obtain the "Sampling Request Form" from the supervisor.

7.2.1.1 Take Sampling Request Form to Material Control and Accountability where a lot number and location will be placed on the form.

7.2.1.2 Obtain the Lot Marking System Number for rinseate and trash cans containing contact waste from MC&A.

7.2.2 Check that a "Radiation Work Permit" and/or "Hazardous Material Permit" are posted and current with each new Sample Request Form.

7.2.2.1 If no permit(s) is/are posted, notify the supervisor.

NOTE: Scales shall be checked at the start of each operating shift or before the first use each day.

7.2.3 If not already completed, check the scales to be used per SOP 20-C-912.

NOTE: VOC and flammable/combustible material shall be moved to respectively designated area identified by the supervisor.

7.2.4 Using a handstacker, move skids of material into the designated sampling or staging areas.

NOTE: Two five gallon containers shall be used unless a composite sample is to be prepared and then three containers are required.

7.2.5 Prepare containers (for cleaning sampling equipment and disposal of trash) as follows:

7.0 PROCEDURE (cont.)

7.2.5.1 Tare weigh the empty, clean, color-coded 5-gallon containers.

7.2.5.2 Stencil the containers with the tare weight and the Lot Marking System Number according to RM-0005, Lot Marking and Color Coding System.

7.2.5.3 Install plastic liners in the five gallon containers.

NOTE: The equipment to be used for sampling is identified in the Sample Request Form.

7.2.6 Obtain sampling equipment that has a "Clean Equipment" tag attached.

7.2.6.1 If clean equipment is not available, obtain dirty equipment and clean per Item 7.8.

7.2.7 Obtain a box of clean, lidded sampling jars.

7.2.7.1 If the box of jars was not labeled, "Clean," process the jars per Item 7.8.

7.2.8 Tare weigh each sample jar (with lid).

7.2.8.1 Mark the tare weight on a piece of marking tape and place on the jar.

7.2.9 Complete the Sample Label, mark the tare weight on the Sample Label, Form 144, M-145, or M-160 to be used (Refer to Figure 1).

7.2.10 Fill out the applicable portions of a "Solid Waste Analysis Request/Custody Request" (SWAR/CR) form per SSOP-0018.

7.2.11 Place an absorbent pad that is applicable for material to be sampled (water/oil) under the sample jars(s).

7.2.12 Using the Log Book Stamps, imprint the "Sampling Log Book."

7.2.13 Fill out the log book with the information required by the stamp.

7.0 PROCEDURE (cont.)

7.3 SAMPLING

CAUTION: ONLY NON-SPARKING TOOLS AND EXPLOSION-PROOF EQUIPMENT SHALL BE USED IN THE VICINITY OF FLAMMABLE OR COMBUSTIBLE MATERIAL SAMPLING LINES.

7.3.1 Remove the locking ring and drum lid from the drum to be sampled.

7.3.2 Visually inspect the waste material to be sampled to determine the physical characteristics (liquid, solid, dry, or moist).

NOTE: HEPA ventilation devices shall have current DOP Test Labels. DOP Test Labels must be unbroken and legible.

7.3.2.1 If the material is dry, install a HEPA filtered ventilation system per SOP 20-C-602.

7.3.3 Check that the drum contents corresponds with the Material Type Code (MTC) on the drum and the Sample Request Form.

NOTE: The supervisor shall inform Site Media Sampling.

7.3.3.1 If the material does not match the form, notify the supervisor.

7.3.4 If a drum contains solid and liquid phases, proceed as follows:

7.3.4.1 Measure the amount of liquid (in inches) in the drum using a COLIWASA.

7.3.4.2 Measure the amount of solid (in inches) using an Auger or Pipe Sampler.

7.3.4.3 Record the percent liquid and solid in the "Sampling Log Book."

NOTE 1: If the liquid or solid phase is less than five percent of the total volume of the material in the drum, the material is considered single phase and the phase that constitutes less than five percent does not require sampling.

NOTE 2: When each phase is equal to or greater than five percent of the total volume of material in the drum, the drum content is considered multi-phase. Both phases shall be sampled individually.

7.3.4.4 Using a clean COLIWASA, sample the liquid per Item 7.6.

7.0 PROCEDURE (cont.)

7.3.4.5 Deposit the sample into a collection jar or can.

7.3.4.6 If the "Sampling Request" form specifies Volatile Organic Analysis, perform Item 7.10.

7.3.4.7 Transfer collection jar with sample to ventilation enclosure.

7.3.4.8 Fill sample jars from material in the collection jar or can.

7.3.4.9 Dispose of excess sample material in the container from which the sample was taken.

7.3.4.10 Place the lid on sample jar.

7.3.4.11 After the required samples have been taken, clean the exterior of the filled sample jars with either a dry or wet cloth and dispose of the cloth per Item 7.8.7.1.

7.3.4.12 Affix the label(s) to sample jar(s).

7.3.4.13 Seal the jar lid with a "Tamper Proof Seal" (Refer to Figure 2).

7.3.4.14 Using a Pipe Sampler or Auger, take a sample of the solid material per Item 7.4 or 7.5.

7.3.4.15 Deposit the sample into a collection jar or can.

7.3.4.16 Transfer the collection jar with sample to ventilation enclosure.

7.3.4.17 Fill sample jars from material in the collection jar or can.

7.3.4.18 Dispose of excess sample material in the container from which the sample was taken.

7.3.4.19 Place the lid on sample jar.

7.3.4.20 After the required samples have been taken, clean the exterior of the filled sample jars.

7.3.4.21 Affix the label(s) to sample jar(s).

7.3.4.22 Seal the jar lid with a "Tamper Proof Seal" (Refer to Figure 2).

7.3.4.23 Clean samples per Item 7.8.

7.0 PROCEDURE (cont.)

7.3.5 If the waste material is a single solid phase, proceed as follows:

7.3.5.1 Using an Auger Sampler or Pipe Sampler, take a sample per Item 7.4 or 7.5.

7.3.5.2 Deposit the sample into a collection jar or can.

7.3.5.3 Transfer the collection jar with sample to ventilation enclosure.

7.3.5.4 Fill sample jars from material in the collection jar or can.

7.3.5.5 Dispose of excess sample material in the container from which the sample was taken.

7.3.5.6 Place the lid on sample jar.

7.3.5.7 After the required samples have been taken, clean the exterior of the filled sample jars.

7.3.5.8 Affix the label(s) to sample jar(s).

7.3.5.9 Seal the jar lid with a "Tamper Proof Seal" (See Figure 2).

7.3.5.10 Clean the sampler per Item 7.8.

7.3.6 If the waste material is a single liquid phase, proceed as follows:

7.3.6.1 Using a clean COLIWASA, take a sample per Item 7.6.

7.3.6.2 If the "Sampling Request Form" specifies Volatile Organic Analysis, perform 7.10.

7.3.6.3 Deposit the sample into a collection jar or can.

7.3.6.4 Transfer collection jar with sample to ventilation enclosure.

7.3.6.5 Fill sample jars from material in the collection jar or can.

7.3.6.6 Dispose of excess sample material in the container from which the sample was taken.

7.3.6.7 Place the lid on sample jar.

7.3.6.8 After the required samples have been taken, clean the exterior of the filled sample jars.

7.0 **PROCEDURE** (cont.)

7.3.6.9 Affix the label(s) to sample jar(s).

7.3.6.10 Seal the jar lid with a "Tamper Proof Seal" (See Figure 2).

7.3.6.11 Clean the sampler per Item 7.8.

7.3.7 If a composite sample is to be taken from drums of multi-phase material, record the Lot Marking System Numbers of the drums making up the composite in the Log Book and proceed as follows:

7.3.7.1 Notify the supervisor.

7.3.7.2 Obtain drums that are color coded and identified the same as the drum to be sampled.

7.3.7.3 Using a clean portable pump, transfer the liquid to the empty drum(s).

7.3.7.4 Using an clean Auger Sampler or Pipe Sampler, take samples of the solid material in the drums per Item 7.4 or 7.5.

7.3.7.5 If there is not enough material to fill the samples, take a second sample from each drum.

7.3.7.6 Using a clean stainless steel spatula, mix the contents of the sample can to blend the sample material.

7.3.7.7 Using a scoop, take a sample of the blended composite.

7.3.7.8 Deposit the sample into a collection jar or can.

7.3.7.9 Transfer collection jar with sample to ventilation enclosure.

7.3.7.10 Fill sample jars from material in the collection jar or can.

7.3.7.11 Dispose of excess sample material in the container from which the sample was taken.

7.3.7.12 Place the lid on sample jar.

7.3.7.13 After the required samples have been taken, clean the exterior of the filled sample jars.

7.3.7.14 Affix the label(s) to sample jar(s).

7.0 PROCEDURE (cont.)

7.3.7.15 Seal the jar lid with a "Tamper Proof Seal" (See Figure 2).

7.3.7.16 Lid the composite sample can.

7.3.7.17 Mark the can with the same Material Type and Source Code as the drums that were sampled.

7.3.7.18 Clean the sampler per Item 7.8.

7.3.7.19 Using a COLIWASA, sample the liquid from the drums per Item 7.6.

7.3.7.20 If the "Sampling Request Form" specifies Volatile Organic Analysis, perform 7.10.

7.3.7.21 Deposit the sample into a collection jar or can.

7.3.7.22 Transfer collection jar with sample to ventilation enclosure.

7.3.7.23 Fill sample jars from material in the collection jar or can.

7.3.7.24 Dispose of excess sample material in the container from which the sample was taken.

7.3.7.25 Place the lid on sample jar.

7.3.7.26 After the required samples have been taken, clean the exterior of the filled sample jars.

7.3.7.27 Affix the label(s) to sample jar(s).

7.3.7.28 Seal the jar lid with a "Tamper Proof Seal" (See Figure 2).

7.3.7.29 Mark the can with the same Material Type and Source Code as the drums that were sampled.

7.3.7.30 Clean the sampler per Item 7.8.

7.3.7.31 Prepare the appropriate blank per Item 7.7.

7.3.8 If a composite sample is to be taken from drums of single phase solid material, perform Steps 7.3.7.4 thru 7.3.7.18.

7.3.9 If a composite sample is to be taken from drums of single phase liquid material, perform Steps 7.3.7.19 thru 7.3.7.31.

7.0 PROCEDURE (cont.)

7.3.10 Place the sample jars and blanks in the lockable refrigerator.

7.3.11 Contact MC&A for storage of the drums, Composite Sample Cans, and Trash Containers.

7.3.12 Complete a "Chain-of-Custody Record," Form FMPC-SS-3361 (see Figure 3).

7.3.12.1 If the samples will remain in the area overnight, place the custody record form in the top drawer of the sampling area desk.

7.3.12.2 Lock the desk drawer containing the custody record form.

7.3.13 Lock the refrigerator.

NOTE 1: The supervisor shall arrange to have the samples and "Chain-of-Custody Record" form delivered to the laboratory.

NOTE 2: All sample containers and trash bags shall be surveyed by a Radiation Technician prior to exiting a regulated area.

7.3.14 At the end of the shift, or when sampling is complete, notify the supervisor that samples and blanks require delivery to the Analytical Laboratory.

7.3.15 Ensure that the custody record form accompanies samples being transferred.

7.4 Using the Auger Sampler

7.4.1 Insert the sampler into the material being sampled.

7.4.2 Press down and rotate the sampler T-handle.

7.4.3 Withdraw the sampler from the drum of material.

7.4.4 Check that a complete core sample was taken.

7.4.4.1 If a complete core was not taken, empty the sampler into the drum the material was taken from and return to Step 7.4.1.

7.4.5 Using a clean spatula, push the sample out of the sampler and into a collection jar or can.

7.0 PROCEDURE (cont.)

7.5 Using the Pipe Sampler

NOTE: The pipe sampler shall be long enough to reach the bottom of the container being sampled.

7.5.1 Insert the pipe sampler diagonally through the contents of the drum.

7.5.2 Rotate the pipe sampler once or twice to cut a core of material.

7.5.3 Ensure that the slot is face up.

7.5.4 Slowly withdraw the pipe sampler from the drum.

7.5.5 Check that the entire length of pipe contains material.

7.5.6 If part of the pipe is empty, proceed as follows:

7.5.6.1 Empty the sampler into the drum the material was taken from.

7.5.6.2 Repeat Steps 7.5.1. thru 7.5.5 until a representative sample is obtained.

7.6 Using a COLIWASA SAMPLER

7.6.1 Check to ensure that the inner tubing and the outer sheath are not cracked.

7.6.1.1 If the sampler is cracked, obtain a new, clean, intact sampler.

7.6.2 Insert the inner tubing inside the sheath.

7.6.3 Raise the ground glass end of tube several inches above the hole in the bottom of the sheath.

NOTE: The COLIWASA shall be lowered so that the levels of liquid inside and outside the sampler tube remain even. If the liquid level in the sampler tube is lower than the level outside the sampler, the rate is too fast and will result in a nonrepresentative sample.

7.6.4 Slowly lower the COLIWASA vertically into the drum, keeping the ground glass end away from the hole in the bottom of the sheath.

7.6.5 When the sheath hits the bottom of the drum, push the inner tube downward so that the ground glass end seals the sheath.

7.0 PROCEDURE (cont.)

NOTE: The ground glass end shall seal the tube bottom.

7.6.6 Slowly withdraw the COLIWASA sampler with one hand while wiping the outside of the sampler with a clean disposable cloth.

7.6.7 Place the disposable cloth in a plastic bag that is labelled for the type of material being sampled.

7.6.8 Dispose of trash bags containing non-RCRA waste per SOP 20-C-601.

7.6.9 Dispose of trash bags containing RCRA, or suspected RCRA, waste per SOP 20-C-605.

NOTE: The analyses listed on the "Sampling Request" form should also be performed on blank samples.

7.7 Taking Blanks

NOTE: Wash Water Blanks are taken weekly, alternating with Equipment Blanks and Trip Blanks.

7.7.1 Wash Water Blanks

7.7.1.1 Using a clean (per item 7.8) pressurized hand pump, decant the clean rinseate from the Wash Water Container into the appropriate numbered sample jars.

NOTE: Taken on alternating weeks with Wash Water and Trip Blanks and Equipment Blanks.

7.7.2 Equipment Blank

7.7.2.1 Using a clean (per Item 7.8) pressurized hand pump and deionized water, rinse the clean sampling equipment.

7.7.2.2 Collect the rinseate in a clean (per Item 7.8) one-gallon sample container.

7.7.2.3 Transfer the water from the container into clean sample jars.

7.7.3 Lid the sample jars.

7.0 PROCEDURE (cont.)

NOTE: Trip Blanks are prepared by Site Media Sampling.

NOTE: Trip Blanks shall only be obtained when volatile organic analysis is required for the material being sampled.

NOTE: Trip Blanks are used to measure cross-contamination of volatile organics during transport, and are taken on alternating weeks with Wash Water and Equipment Blanks.

7.7.4 Trip Blanks

7.7.4.1 Contact Site Media Sampling to obtain blanks.

7.7.5 Complete the applicable "Sample Label" (Refer to Step 7.2.9).

7.7.6 Affix the label(s) to the sample jar(s).

7.8 Cleaning Sampling Equipment

NOTE: Cleaning and rinsing shall be performed over the five-gallon container marked with the appropriate 15-digit FEMP Lot Markings (Refer to Step 7.2.5).

7.8.1 Position the five gallon container in the area where cleaning will be performed.

NOTE: A bottle brush shall be used as necessary to remove particulate matter, films, or other dirt.

NOTE: ALQUINOX or LIQUINOX (or equivalent) may be used as the cleaning detergent.

7.8.2 Using a phosphate free liquid detergent solution, wash the sampling equipment thoroughly.

7.8.3 Rinse the sampling equipment with water.

7.8.4 Drain excess water off the sampling equipment.

NOTE: Pesticide grade isopropanol is below laboratory grade isopropanol.

7.8.5 Rinse the sampling equipment with pesticide grade isopropanol and, if necessary, dry with a clean dry cloth.

7.0 PROCEDURE (cont.)

CAUTION: THE LID SHALL BE KEPT ON THE CONTAINER OF USED WASH AND/OR RINSE SOLUTION WHEN NOT IN USE.

7.8.6 Lid the container of used wash/rinse solution.

7.8.7 If the sampler will not be used immediately, proceed as follows:

7.8.7.1 Place the clean sampler in a clean plastic bag or wrap with a plastic sheet.

7.8.7.2 Complete a "Clean Equipment" tag, Form FMPC-PRO-3128, (See Figure 6).

7.8.7.3 Attach the tag to the clean equipment.

7.8.7.4 Store the sampler per Item 7.9.

7.8.8 When the wash/rinse container is full, process the contents as RCRA waste per SOP 20-C-605.

7.8.9 Dispose of absorbent cloths or trash bags which have not come in contact with RCRA waste or suspected RCRA waste per SSOP-0024.

7.9 Storing Sampling Equipment

7.9.1 Seal the plastic bag with tape.

7.9.2 Place the samplers in a clean, protected area.

7.10 Liquid Organic Analysis Sampling

7.10.1 Obtain a septum bottle.

NOTE: The liquid shall reach slightly above the lip of the bottle.

7.10.2 Carefully fill the septum bottle with the sample liquid.

7.10.3 Place the teflon septum (with teflon side down) on top of the bottle.

7.10.4 Screw the plastic lid on the bottle.

7.10.5 Check the liquid for air bubbles by turning the bottle upside down.

7.0 **PROCEDURE** (cont.)

NOTE: Organic analysis requires that no air bubbles be present in the septum bottle.

7.10.6 If air bubbles are present, empty the bottle and repeat Steps 7.10.2 through 7.10.5 until no air bubbles are present.

7.10.7 Label the septum bottle.

8.0 **APPLICABLE FORMS**

8.1 M-144, M-145, M-160, "Sample Label"

8.2 No Form Number, "Tamper Proof Seal"

8.3 FMPC-SS-3361, "Chain of Custody Record"

8.4 FMPC-PRO-3128, "Clean Equipment Tag"

Green on White
For Enrichment
Less Than 0.71

FMPC-SAMPLE LABEL/RCRA MATERIAL-DEPLETED

SAMPLING LOCATION
COLLECTOR
TYPE OF MATERIAL
TYPE OF SAMPLE
LOT NUMBER OR IDENT.
DATE | TIME | NET WT

P.O. NO./ENRICHMENT

FMPC-FORM-306 M-144 (REV 11/29/89)

Red on White
For Enrichment
Greater Than
0.71

FMPC-SAMPLE LABEL/RCRA MATERIAL-ENRICHED

SAMPLING LOCATION.
COLLECTOR.
TYPE OF MATERIAL.
TYPE OF SAMPLE.
LOT NUMBER OR IDENT.
DATE. | TIME: | NET WT.

P.O. NO./ENRICHMENT

FMPC-FORM-306 M-145 (REV. 11/29/89)

(Grams) Gross: Tare:

Black on Yellow
For Enrichment
Equal to 0.71

FMPC-SAMPLE LABEL/RCRA MATERIAL-NORMAL

SAMPLING LOCATION
COLLECTOR
TYPE OF MATERIAL
TYPE OF SAMPLE
LOT NUMBER OR IDENT
DATE | TIME | NET WT

P.O. NO./ENRICHMENT

FMPC-FORM-306 M-160 (2/20/91)

SAMPLE LABELS
M-144, M-145, M-160
Figure 1

If Seal is broken or package damaged check contents before signing receipt.

TAMPER PROOF SEAL
Figure 2

FMPC
PRODUCTION OPERATIONS
CHAIN-OF-CUSTODY RECORD

Request No. _____

Company's Name and Address: _____ Phone No.: _____ Carrier Way Bill No.: _____ Lab Destination: _____

Name of Sampler(s): _____ Phone No.: _____ Badge No.: _____

SAMPLE NUMBER	SAMPLE LOCATION AND DESCRIPTION (Waste Type)	SAMPLED		SAMPLE TYPE	CONTAINER TYPE	ANALYSES REQUESTED (please refer to last column)						SAMPLE COND ON RECEIPT	TYPES OF ANALYSES
		DATE	TIME										
													1 Complete Analysis
													2 Total U
													3 Total Th
													4 EP Toxicity
													5 Isotopic
													6 Th-228
													7 Th-232
													8 Ra-226
													9 UpCu/g Sample (U Calculated)
													10 TnpCu/g Sample (Th Calculated)
													11 _____
													12 _____
													13 _____
													14 _____
													15 _____

Field Information: _____

Possible Sample Hazards: _____

SIGNATURES:

1. Relinquished By: _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By: _____
2. Relinquished By: _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By: _____
3. Relinquished By: _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By: _____
4. Relinquished By: _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By: _____

NO.	DISTRIBUTION OF COPIES
1	To Accompany Samples
2	Field Copy

CHAIN OF CUSTODY
FMPC-SS-3361
Figure 3

CLEANED BY: _____

DATE: _____

Cleaned according to sop : _____

FMPC-OPR-3128 (6/22/89)

CLEAN EQUIPMENT
FMPC-PRO-3128
Figure 4

RECORD OF ISSUE/REVISION

DATE	REV. NO.	DESCRIPTION AND AUTHORITY
04-10-92	0	Procedure required for taking samples from drums of waste material per Request No. P92-049, initiated by J. Hey.

1.0 PURPOSE

NON-CONTROLLED COPY

The purpose of this document is to provide the procedure for completing the Material Evaluation Form (MEF) to classify material as RCRA or NON-RCRA.

2.0 APPLICABILITY

This procedure shall apply to the classification of raw, process, excess, and waste material.

3.0 RESPONSIBILITIES

3.1 The Material Generator shall be responsible for the following:

3.1.1 Completing Section I, with input from IRS&T, of the Material Evaluation Form.

3.1.2 Maintaining a copy of the completed MEF for each generated stream.

3.1.3 Determining if a prior MEF has been submitted.

3.1.4 Completing a new MEF if changes occur to a previously evaluated material stream.

3.2 Facilities and Materials Evaluation (F&ME) shall be responsible for the following:

3.2.1 Completing Section II of the MEF per this procedure.

3.2.2 Determining that sufficient information exists to classify material as RCRA or NON-RCRA.

3.2.3 Recommending to Environmental Monitoring additional information that is required to complete a RCRA determination.

3.2.4 Maintaining the original of the completed form on file.

3.2.5 Establishing a primary and alternate contact within F&ME responsible for replying to inquiries on the completing and utilization of the Material Evaluation Form.

3.3 Environmental Engineering shall be responsible for the following:

3.3.1 Completing Section III of the MEF per this procedure.

R - MATERIAL REVISED, ADDED, OR DELETED.

3.0 RESPONSIBILITIES (cont.)

3.3.2 Maintaining a record of the completed form.

3.4 Material Control and Accountability (MC&A) shall be responsible for the following:

3.4.1 Retaining a record copy of Section IV for each Material Evaluation Number.

3.4.2 Maintaining a listing that relates inventory numbers to the Material Evaluation Number.

3.4.3 Assisting Material Generator in maintenance of Material Evaluation files and tracking the Material Evaluation form.

3.5 Facilities & Warehousing (F&W) shall be responsible for the following:

3.5.1 Providing a Material Evaluation Number to generator upon request.

3.5.2 Maintaining a log of Material Evaluation Numbers.

3.5.3 Retaining a record copy of Section IV for each Material Evaluation Number.

3.6 Industrial, Radiological Safety, and Training (IRS&T) shall be responsible for the following:

3.6.1 Reviewing data provided by the Material Generator to establish the Health & Safety requirements applicable to the sampling, handling, packaging processing or transportation of material.

3.6.2 Reviewing, after completion of Section I and II of the MEF, the additional information and identifying additional personnel safety requirements.

3.7 Toxic and Solid Waste Programs (TSWP) shall be responsible for the following:

3.7.1 Providing the Department of Transportation (DOT) shipping name.

3.7.2 Providing the DOT hazard class.

3.7.3 Specifying required labels.

3.7.4 Providing DOT identification No.

R = MATERIAL REVISED, ADDED, OR DELETED.

3.0 RESPONSIBILITIES (cont.)

3.7.5 Providing EPA waste No.

3.7.6 Providing applicable reactivity group codes.

3.7.7 Filling out Section IV of the MEF.

4.0 DEFINITIONS

4.1 Material Generator - a person at the originating facility who is authorized to prepare raw material, process material, and waste material for transfer.

4.2 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 and proper management of hazardous waste.

4.3 Hazardous Waste - 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.

4.4 Ignitable - Liquid waste with closed-cup flash points < 60°C (140°F), or non-liquid waste capable of causing fire through friction, absorption of moisture, or spontaneous chemical changes.

4.5 Corrosive - Aqueous (water based) wastes with a pH $\leq$ 2 or $\geq$ 12.5.

4.6 Reactive - Waste that exhibits properties such as reacting violently, forming potentially explosive mixtures or generating toxic gases when mixed with water, generating toxic gases (cyanide or sulfied) at pH between 2 and 12.5, or detonating or exploding at standard temperature and pressure or when heated under confinement.

4.7 Authorized Personnel - Personnel who have successfully completed all training requirements to perform work related to this procedure and have been authorized by the Facility Owner to perform the work.

4.8 Controlled Holding Area - The area designated for holding uncharacterized material and staging characterized material (excluding backlog material and material generated from a soil boring activity) for a maximum period of 90 calendar days.

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4.0 DEFINITIONS (cont.)

4.9 Fingerprint Analysis - An analytical process providing a brief description of material parameters as listed in Table 5.

4.10 Raw Material - A non-manufactured substance at the FEMP.

4.11 Process Material - A substance which has gone through a physical state of change.

4.12 Excess Material - A substance which has exceeded its recommended shelf life or intended use.

4.13 Waste Material - A substance which has expended its usefulness, non-recyclable and non-recoverable.

5.0 GENERAL

5.1 General Instructions for Completing the Material Evaluation

5.1.1 Fill in all items of each section. If an item cannot be answered, enter "NOT KNOWN".

5.1.1.1 If an item is not applicable to the material stream being evaluated, indicate as "N/A".

5.1.2 If there is not enough space on the form to record the required data, proceed as follows:

5.1.2.1 Prepare an attachment sheet with the MEF number (and Revision Number, if applicable) and date.

5.1.2.2 Enter the Item Number that corresponds to the Item Number on the MEF.

5.1.2.3 Enter the required data on the attachment sheet.

5.1.2.4 Sign the attachment sheet.

5.1.2.5 In the item block on the MEF, enter "See attachment".

5.1.2.6 Fasten the attachment sheet to the MEF.

5.1.3 Refer questions regarding the form to F&ME.

6.0 PROCEDURE

6.1 Identification of Material

MATERIAL GENERATOR

6.1.1 If no information is known on the material and the container has no identification, contact F&ME and IRS&T for direction.

6.1.2 Obtain a Material Evaluation Number from F&W.

6.1.3 Record the Material Evaluation Number at the top of each sheet of the Material Evaluation, Form FMPC-OPR-3252 (See Figure 1).

6.1.4 Complete Section I, Items 1 thru 16b, of the Material Evaluation Form per Table 1.

6.1.5 When Section I (Items 1 thru 16b) is completed, forward the form to IRS&T.

NOTE: The material being evaluated shall remain in the generator area until direction is received from F&ME for disposition.

6.2 Establish Safety Requirements

IRS&T

6.2.1 Review the data provided in Section I of the MEF.

6.2.2 Determine potential health or safety concerns that may be encountered while sampling, handling, or processing the material.

6.2.3 In Item 16c specify protective gear that must be used while sampling, handling, or processing material (such as protective clothing, respirator, gloves).

6.2.4 Sign Item 16d and return the MEF to the Material Generator.

6.3 Identification of Material

MATERIAL GENERATOR

6.3.1 Complete Section I of the MEF and forward the form to F&ME.

6.0 PROCEDURE (cont.)

6.4 Evaluation of Material

F&ME

6.4.1 Ensure an evaluation has not been previously completed for this material type per the source and material type code (Item 1 of Section 1). F&ME may use entire lot codes to designate a waste stream.

6.4.2 Complete Section II of the Material Evaluation form per Table 2.

6.4.3 When Section II is complete, proceed as follows:

6.4.3.1 If the material is classified RCRA or additional information is required for the classification (refer to Item 7 of Section IV), forward the form to Environmental Engineering and Material Generator.

6.4.3.2 If the material is classified as NON-RCRA or exempt (refer to Item 7 of Section II), retain the original form on file and transmit copies to distribution.

NOTE: The Material Generator shall respond by moving the drum to the designated storage area.

6.5 Material Analysis/Disposition Determination

F&ME

6.5.1 Refer to Section II and complete the following applicable substep.

6.5.1.1 If the material had been classified, proceed to Item 6.8.

6.5.1.2 If additional information is required to classify the material, complete items 13 and 14 of Section II.

6.5.1.3 Forward MEF to IRS&T to determine any additional safety requirements.

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6.0 PROCEDURE (cont.)

6.6 Establish Safety Requirements

IRS&T

6.6.1 Review additional information for safety concerns and identify any additional safety requirements.

6.6.2 Sign and forward the MEF to F&ME.

6.7 Additional Requirements

F&ME

6.7.1 Forward a copy of Section II to the Material Generator as authorization to prepare uncharacterized material for transfer to the Controlled Holding Area and a copy to Environmental Monitoring to identify and authorize sampling requirements.

NOTE: The original form shall be retained until the required information is received.

6.7.2 When additional information is received, proceed as follows:

6.7.2.1 Fill in the completion date (Item 15 of Section II).

6.7.2.2 Ensure that Section II is complete.

6.7.2.3 Initial and date each revision of Section II.

6.7.2.4 Briefly explain any corrections made (Item 2 of Section II) to the information contained in Section II.

6.7.2.5 Forward the Material Evaluation and analysis results to Environmental Engineering.

6.8 Classified Material

ENVIRONMENTAL ENGINEERING

NOTE: Refer to Item 7 of Section II for material classification.

6.8.1 If the material is classified as NON-RCRA, proceed as follows:

6.0 PROCEDURE (cont.)

6.8.1.1 For material in storage, transmit the original Material Evaluation form to F&ME, a copy to the Facility Owner of the Controlled Holding Area, and a copy to the material generator.

6.8.1.2 For material being held at the generator area, forward the original Material Evaluation form to F&ME and a copy to the material generator.

6.8.2 If the material is classified as RCRA, proceed as follows:

6.8.2.1 Complete Section III per Table 3.

6.8.2.2 Forward the Material Evaluation Form to Toxic & Solid Waste Programs.

6.9 Material Identification

TSWP

NOTE: DELETED

6.9.1 Complete Section IV per Table 4.

6.9.2 Review section IV and confirm container information is correct.

6.9.3 Forward the MEF to FM&E.

6.10 Revising the Material Evaluation

MATERIAL GENERATOR, F&ME, OR ENVIRONMENTAL ENGINEERING

6.10.1 Determine a revision to the MEF is required.

6.10.2 Notify the appropriate departments of the numbered MEF requiring change and the revision required.

MATERIAL GENERATOR

6.10.3 Obtain file copy of the specified MEF and a new MEF.

6.10.4 Obtain a revision number from Waste Management.

6.0 PROCEDURE (cont.)

6.10.5 Record the original MEF number and the revision number on the new MEF.

6.10.6 Complete Section I of the new MEF incorporating the necessary revisions and submit to F&ME.

6.10.6.1 If the revision requested is not applicable to Section I, complete Section I per the original MEF and forward to F&ME.

F&ME/ENV. ENG./TSWP/IRS&T

6.10.7 If the revision is applicable to Section II, III, or IV, complete the new MEF incorporating the revision.

7.0 APPLICABLE DOCUMENTS

7.1 Drivers

None

7.2 Reference Documents

None

8.0 APPLICABLE FORMS

8.1 FS-F-3252, "Material Evaluation Form"

TABLE 1
INSTRUCTIONS FOR COMPLETING MATERIAL EVALUATION FORM - (SECTION I)

ITEM NO	DESCRIPTION
1	Record the FEMP Source Code (SRC), Material Type Code (MTC), and the 15 digit Lot Code.
2	Designate the Plant/Building/Site location where material was generated.
3	Specify the process/building area which generates the material.
4	Provide the name of equipment generating the material.
5	Record the approximate date of generation (year, month, day) as specifically as possible.
6	Indicate the physical state of the material.
7	Estimate net weight of the material.
8	Indicate whether the material contains more than one substance (such as contaminated gloves, coveralls, booties, or other contaminated items).
9	Indicate whether the material is a waste.
10	Provide common names of the material.
11	Provide chemical names associated with the material.
12	Indicate sources of the common and chemical names.
13	Specify alternate material name (For example, identical material generated by different equipment).
14	Record alternate codes (source or material codes) used for material which is chemically identical to this material.
15	Indicate any substance, such as pesticides, solvents, or heavy metals, which is contained or suspected to be contained in the material.
16	a) Specify the reason for suspecting the substance indicated and quantity of suspect material[1]. b) List sources of information utilized for identifying the suspect substances indicated.

[1] Attach a copy of the MSDS as applicable.

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TABLE 1 (cont.)
INSTRUCTIONS FOR COMPLETING MATERIAL EVALUATION FORM - (SECTION I)

ITEM NO	DESCRIPTION
16 (cont.)	c) Identify safety concerns & special safety requirements. d) Sign and date the form
17	If a fingerprint visual inspection (Table 5) of the material was completed, attach to the Material Evaluation Form.
18	Record and describe the number of solid/liquid/gas layers within the material.
19	Record the pH of liquid material or liquid phase of material[2].
20	Record the flashpoint of liquid material or liquid phase[2].
21	If the material is a wet solid (sludge) and a paint filter test has been completed, specify test results (solid or liquid)[2].
22	Indicate if material is considered reactive. Include an explanation.
23	If the material is not a liquid, indicate if material is ignitable. Include an explanation.[2]
	DELETED
24	Provide additional information that may be used to evaluate the material.
25	List additional sources (such as phone call, specification, procedures, or other input) of information used to complete this form.
26	a) Provide the name and extension number of the individual responsible for responding to questions regarding Section I. b) Record the date Section I is completed.

[2] Attach results if available. Identify source, such as a sample plan.

R - MATERIAL REVISED, ADDED, OR DELETED.

TABLE 2
INSTRUCTIONS FOR COMPLETING MATERIAL EVALUATION FORM - (SECTION II)

ITEM NO	DESCRIPTION
1	Indicate if material is waste (discarded, used, by- product).
2	Indicate if waste is excluded under 261.4(a) (CWA pointsource discharge, irrigation return flow, AEC source, special nuclear or by-product material, insitu mining waste).
3	Indicate if waste excluded from regulation under 264.1(b).
4	If the waste is listed in 261 Subpart D, or material contains a waste listed in subpart D, indicate the list and the waste number.
5	Indicate if waste exhibits characteristics specified in 261 Subpart C. List the characteristic exhibited.
6	Indicate if the material is a possible RQ hazardous substance. If yes, list the RQ amount in Lbs.
7	Indicate material classification. If material can not be classified indicate that the material needs further action and provide recommendations regarding information required.
8	Indicate if classification was based on data from Section I or an evaluation of an identical waste stream. If based on previous evaluation, list the Material Evaluation # and lot code of stream.
9	Indicate whether or not the material is subject to land ban restrictions and the effective date if applicable.
10	Distribute to the Departments listed in Section IV (Item 9).
11	List additional sources of information (phone calls, manufacturing specification, reference) used in this evaluation.
12	Provide the name and phone extension of the individual responsible for responding to questions regarding Section II and the date that Section II was completed.books).
13	Indicate if sampling is required (Refer to Section II Item 7).
14	Indicate if amount of time necessary for sampling and analysis require transfer of material to a controlled holding area. If yes, record date that the material was authorized for transfer.
15	Indicate date that additional information was included.
16.a	Identify any additional safety concerns and requirements.
16.b	Sign and date the form.

R - MATERIAL REVISED, ADDED, OR DELETED.

TABLE 3
INSTRUCTIONS FOR COMPLETING MATERIAL EVALUATION FORM - (SECTION III)

ITEM NO	DESCRIPTION
	DELETED
	DELETED
	DELETED
1	Based on Section I and II (or recent information) indicate container recommended (such as carbon steel, stainless steel, polyethylene).
2	Based on Section I and II (or recent information) indicate the reactivity group codes associated with the material.
3	List additional sources of information used to complete the form (phone calls, material specifications, reference material).
4	Provide the name and extension of the individual responsible for responding to questions regarding Section III and the date that Section III was completed.

R - MATERIAL REVISED, ADDED, OR DELETED.

TABLE 4
INSTRUCTIONS FOR COMPLETING MATERIAL EVALUATION FORM - (SECTION IV)

ITEM NO	DESCRIPTION
1	Provide the D.O.T. Shipping Name for material.
2	Provide the D.O.T. Hazard Class for material.
3	List required D.O.T. drum labels.
4	Provide the D.O.T. Identification No. (UN or NA) and prefix.
5	Provide the EPA Waste No. noted for material.
6	List applicable reactivity group codes (Refer to Section III, Item 2).
7	Record the FEMP lot code (Refer to Section I, Item 1).
8	Indicate whether a revision is required to the MEF.
9	Distribution.
10	Provide the name and extension of the individual responsible for responding to questions regarding Section IV and the date that Section IV was completed.

TABLE 5
FINGERPRINT ANALYSIS PARAMETERS

PARAMETER	APPLICABILITY	TEST METHOD/REQUIREMENTS
Visual inspection	Required for all waste streams	To include, at a minimum, a discussion of the following: general description material color(s) particle size apparent stains multiple phases probe drum with pipe to ensure consistency
Liquid content	Required for waste suspected of containing free liquids	SW-846-9095: Paint Filter Liquids Test (PFLT)
pH	Required for waste streams with a free liquid phase (as determined by the PFLT)	SW-846-9040: pH Electrometric Method FMPC Method No. 3033[1]
Flash point	Required for waste with a free liquid phase (as determined by the PFLT)	Flash point meter
Density/specific gravity	Required for homogeneous wastes only; density for solid wastes, specific gravity for liquid wastes	Gravimetric for Density/ASTM D 1217 for Specific Gravity FMPC Method Nos. 1004 and 1005[1]

[1] These references are included for information, not for operational use.

R - MATERIAL REVISED, ADDED, OR DELETED.

Fernald Site
MATERIAL EVALUATION FORM

MEF NO.: _____

MEF REV. NO.: _____

SECTION I - MATERIAL GENERATOR

1. FEMP SRC. | MTC
2. PLANT AND/OR BUILDING NO.
3. PROCESS AREA
4. EQUIPMENT NAME(S):
5. MEF NO DATE | MEF REV DATE
6. MATERIAL PHYSICAL STATE: ☐ Liquid ☐ Gas ☐ Wet Solid (Sludge) ☐ Dry Solid
7. APPROXIMATE NET WEIGHT OF FULL CONTAINER? ☐ <100 lbs. ☐ 100 to 1000 lbs ☐ >1000 lbs.
8. DOES MATERIAL CONSIST OF MORE THAN ONE SUBSTANCE? ☐ YES ☐ NO
9. IS MATERIAL A WASTE? ☐ YES ☐ NO
10. COMMON NAMES:
11. CHEMICAL NAMES:
12. COMMON/CHEMICAL NAME SOURCE: ☐ Process Information ☐ MSDS ☐ Container Label ☐ FEMP Lot Code | OTHER:
13. SIMILAR MATERIAL NAME
14. SIMILAR MATERIAL LOT CODE(S)
15. SUBSTANCES SUSPECTED:

		☐ Endrine	☐ Methylene Chloride	☐ TBP/Kerosene
☐ Aerosols	☐ Cresol	☐ Heptachlor	☐ Motor/Engine Oil	☐ Tetrachloroethylene
☐ Arsenic	☐ m-Cresol	☐ Hexachlorobenzene	☐ Nitrobenzene	☐ 1,1,1-Trichloroethane
☐ Barium	☐ o-Cresol	☐ Hexachloroethane	☐ Other Organics	☐ 2,4,5-TP (Silvex)
☐ Benzene	☐ p-Cresol	☐ Hexachloro-1,3-butadiene	☐ Paint Stripper	☐ 2,4,5-Trichlorophenol
☐ Cadmium	☐ 2,4-D	☐ Hydraulic Oil	☐ Paint Thinner/Mineral Spirits	☐ 2,4,6-Trichlorophenol
☐ Carbon Tetrachloride	☐ Degreaser	☐ Ink	☐ Pentachlorophenol	☐ Toxaphene
☐ Chlordane	☐ 1,4-Dichlorobenzene	☐ Lead	☐ Perchloroethylene	☐ Trichloroethylene
☐ Chlorobenzene	☐ 1,2-Dichloroethane	☐ Lindane	☐ Pyridine	☐ Unknown
☐ Chloroform	☐ 1,1-Dichloroethylene	☐ Mercury	☐ Selenium	☐ Vinyl Chloride
☐ Chromium	☐ 2,4-Dinitrotoluene	☐ Methoxychlor	☐ Silver	☐ Xylene
☐ Coolants	☐ Enamel	☐ Methyl ethyl ketone	☐ Synthetic oil	☐ Oil

16. a. REASON FOR SUSPECTING ALL SUBSTANCES AND QUANTITY
16. b. SOURCE FOR REASON AND QUANTITY (Attach MSDS if Available)

		☐ MSDS	☐ Prior Evaluation of Similar Material
☐ Personnel Interviews	☐ AEDO Log	☐ Container Label	
☐ Historical Records	☐ Physical Evidence	☐ Sump Report	What Material: _____
☐ FEMP Lot Code	☐ Process Information	☐ Spill Database	SRC: _____ MTC: _____

16. c. HEALTH AND SAFETY CONCERNS/REQUIREMENTS
16. d. SIGNATURE AND DATE
17. HAS THE "FINGERPRINT" VISUAL INSPECTION BEEN COMPLETED? ☐ YES ☐ NO
18. NUMBER OF PHASES
19. pH (IF KNOWN) (Attach Lab Results)
20. FLASH POINT (IF KNOWN) (Attach Lab Results)
21. HAS A PAINT FILTER TEST BEEN COMPLETED? ☐ YES ☐ NO
22. IS IT REACTIVE? ☐ YES ☐ NO | EXPLAIN
23. IS IT IGNITABLE? ☐ YES ☐ NO | EXPLAIN
24. OTHER INFORMATION (Example: Is the Material a Product or Waste?)
25. ADDITIONAL SOURCES OF INFORMATION
26. PRIMARY CONTACT INDIVIDUAL | EXTENSION | DATE COMPLETED

NOTE: Form shall be completed using ink or a typewriter
NOTE: Only WEMCO employees shall sign the form

FS-F-3252 (REV 10/10/91) Sheet 1

MATERIAL EVALUATION FORM
FORM NO. FS-F-3252
Figure 1 (Sheet 1 of 2)

R - MATERIAL REVISED, ADDED, OR DELETED.

Fernald Site
MATERIAL EVALUATION FORM
(Continued)

MEF NO _____
MEF REV NO _____

SECTION II - FACILITY AND MATERIALS EVALUATION

1. IS MATERIAL A WASTE? ☐ YES ☐ NO
2. IS IT EXCLUDED UNDER 261.4(a)? ☐ YES ☐ NO
3. IS IT EXCLUDED UNDER 261.4 (b)? ☐ YES ☐ NO
4. DOES IT CONTAIN A LISTED WASTE AS PER 261 SUBPART D? ☐ F___ ☐ P___ ☐ U___ ☐ not listed
5. DOES IT EXHIBIT ANY CHARACTERISTICS AS PER 261 SUBPART C? ☐ YES ☐ NO EXPLAIN
6. IS IT A RQ HAZARDOUS SUBSTANCE? ☐ YES ☐ NO POUNDS
7. CLASSIFICATION AS A WASTE ☐ RCRA Hazardous Waste ☐ Source Exempt ☐ Non-RCRA Waste ☐ Radioactive ☐ Needs Further Action (re sampling) EXPLAIN:
8. PRIMARY BASIS FOR CLASSIFICATION ☐ Generator Information ☐ Prior material evaluation WHAT MATERIAL? LOT NUMBER
9. IS IT SUBJECT TO LAND BAN RESTRICTIONS? ☐ NO ☐ YES Effective Date
10. DISTRIBUTE PER SECTION IV ITEM 9
11. OTHER INFORMATION SOURCES USED
12. PRIMARY CONTACT INDIVIDUAL — EXTENSION — DATE COMPLETED
13. IS SAMPLING REQUIRED? ☐ YES ☐ NO
14. IS TRANSFER TO CONTROLLED HOLDING AREA REQUIRED? ☐ YES ☐ NO DATE
15. INFORMATION ACTION COMPLETION DATE
16. HEALTH AND SAFETY CONCERNS REQUIREMENTS
16. B. SIGNATURE AND DATE

SECTION III - ENVIRONMENTAL ENGINEERING

1. RECOMMENDED STORAGE CONTAINER MATERIAL ☐ Carbon Steel ☐ Stainless Steel ☐ Polyethylene ☐ Other
2. APPLICABLE REACTIVITY GROUP CODES ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐ H
3. OTHER INFORMATION SOURCES USED
4. PRIMARY CONTACT INDIVIDUAL — EXTENSION — DATE COMPLETED

SECTION IV - TOXIC AND SOLID WASTE PROGRAMS

1. PROPER D.O.T. SHIPPING NAME
2. D.O.T. HAZARD CLASS
3. REQUIRED LABELS
4. D.O.T. IDENTIFICATION NO ☐ UN ☐ NA — SUFFIX
5. EPA WASTE NO
6. APPLICABLE REACTIVITY GROUP CODES *(COPY FROM SECTION III, ITEM 2)*
7. FEMP SRC AND MTC *(COPY FROM SECTION I, ITEM 1)* — SRC — MTC
8. IS A REVISION TO MEF REQUIRED? ☐ YES ☐ NO
9. DISTRIBUTION

	DATE
MATERIAL GENERATOR	
ENVIRONMENTAL ENGINEERING	
ENVIRONMENTAL MONITORING	
MC&A	
IPS&T	
FACILITIES AND WAREHOUSING	
FBME	
CONTROLLED HOLDING AREA	

10. PRIMARY CONTACT INDIVIDUAL — EXTENSION — DATE COMPLETED

FS-F-3252 (REV 10/10/91), Sheet 2

MATERIAL EVALUATION FORM
FORM NO. FS-F-3252
Figure 1 (Sheet 2 of 2)

R - MATERIAL REVISED, ADDED, OR DELETED.

RECORD OF ISSUE/REVISIONS

DATE	REV. NO	DESCRIPTION AND AUTHORITY
01-11-91	0	Instructions for completing the Material Evaluation form required per Request No. P90-292, initiated by K. Nuhfer.
04-16-91	1	Revised to update form and include steps to allow for an MEF revision per Request No. P91-093, initiated by J. Ogg.
06-20-91	2	Revised to update technical content and form per Request No. P91-235, initiated by R. Henderson.
10-22-91	3	Revised to insert correct form per Request P91-390, initiated by L. Hamblin.

STEP 3.

270A

1.0 PURPOSE

This procedure provides instructions for controlling and handling soil, debris, and waste from projects at the Fernald Environmental Management Project (FEMP), while maintaining standards for worker safety and environmental protection.

2.0 SCOPE

This procedure describes the requirements and responsibilities for controlling and handling the soil, debris, and waste from removal actions, construction projects, and planned maintenance activities at the Westinghouse Environmental Management Company of Ohio (WEMCO). This procedure provides a management method which minimizes the release of hazardous substances to the environment during construction maintenance, or removal action-excavation, and demolition activities.

3.0 DEFINITIONS

Administrative Record - An organized collection of records open to public review, that documents FEMP compliance with the requirements set forth by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - The law that mandates the development of organizational structure and procedures to respond to releases, or threats of releases of hazardous substances or pollutants/contaminants.

Construction Excavation/Penetration Permit - A permit that lists known hidden hazards or obstructions in an area where excavation or penetration activities will take place.

Debris - Solid materials that have been manufactured or processed (excluding treatment residuals). Natural geological material that exceeds a 9.5 mm sieve size such as gravel, cobbles, and boulders, or an inseparable mixture of such material with soil, liquid, sludge, or other solid waste materials.

Disposition Location - A location designated on the Construction Waste Identification and Disposition (CWID) form for the storage or disposal of waste.

Fixed Contamination - Radioactive contamination that is not readily removable.

Future Use Material - Reusable material held for anticipated use in the plant and/or in projects.

3.0 DEFINITIONS (cont.)

Hazardous Substance - A substance designated for special consideration under the Clean Air Act, Clean Water Act, or Toxic Substance Control Act (TSCA), any waste that Resource Conservation and Recovery Act (RCRA) designates as hazardous, and any material that the Environmental Protection Agency (EPA) lists as presenting a substantial danger to health and the environment and a material, including its mixtures and solutions as listed in 49 CFR.

Hazardous Waste - Discardable material containing or exhibiting hazardous or toxic waste characteristics or listed as defined in Title 40 of the Code of Federal Regulations, Part 261 Resource Conservation Recovery Act (RCRA).

Metal Refuse - Metal not suitable for reclamation due to a hard-to-remove non-metallic wrapping, mixed metal composition, heavily rusted, less than 1/4-inch thick, or internal non-decontaminatable surfaces.

Mixed Waste - Contains RCRA constituents and radiological contamination.

Pollutant/Contaminant - A substance, not listed as hazardous, that may cause an adverse affect in organisms and/or the offspring of organisms if inhaled, absorbed, or ingested.

Project - For purposes of this procedure, project is defined as any (1) CERCLA Removal Actions, (2) Construction projects, or (3) maintenance activities.

Project Sampling Plan - A plan developed by Environmental Monitoring that specifies the sampling to be conducted for a specific operation.

Radioactive Contaminated Waste - Material such as concrete, liquid, or soil, that contain concentrations of radionuclides exceeding those specified in DOE Order 5400.5, "Radiation Protection of the Public and the Environment". Also non-bulk materials such as metal, which exhibit surface contamination in excess of unrestricted release criteria specified in Industrial Radiological Safety and Training (IRS&T) departmental procedures.

Recoverable Metals - Metals that are suitable for free release, reuse, or recycling.

RCRA Project File - A file that consists of a scope of work, "Construction Waste Identification/Disposition (CWID)" form, National Environmental Protection Agency (NEPA) documents, activity drawings, process knowledge, sampling plan, and analytical results.

3.0 DEFINITIONS (cont.)

Removable Contamination - Surface contamination that is readily removed using the filter paper smear technique.

Removal Site Evaluation (RSE) - The documented results of an inspection (if necessary) and assessment of a release or threat of release of a hazardous substance, pollutant, or contaminant to determine if a CERCLA response is required. The RSE is submitted to the Department of Energy (DOE) for review and is also maintained as a part of the Administrative Record File.

Resource Conservation and Recovery Act (RCRA) - The regulatory statute that mandates "cradle-to-grave" control of specified hazardous waste by imposing management requirements on generators, transporters, and owners/operators of treatment, storage, and disposal (TSD) facilities.

Rubble - Non-metallic and non-reusable material (such as tiles, gravel, concrete, asphalt, masonry) greater than 2 inches in thickness.

Soil - Unconsolidated earth material composing the surficial geologic strata, consisting of clay, silt, or gravel size particles (sizes as classified by the U.S. Soil Conservation Service). Soil may also include roots, grasses, weeds or leaves, a mixture of the above-mentioned materials with other liquids, sludges, or solids that are inseparable by simple mechanical removal process.

Toxic Substance Control Act (TSCA) - The law that enables the Environmental Protection Agency to control chemicals and substances, such as PCBs, dioxins, and asbestos, by requiring that all old and new materials entering the environment be tested. Also regulating the release of chemicals and substances when necessary.

Waste - Refuse or discarded materials that are abandoned, inherently waste-like, or recycled. Waste can be comprised of solids, liquids, or gases.

Waste Packaging Area - An area adjacent to the construction site where empty waste containers are filled with construction waste.

NOTE: The packaging area background radiation level shall not exceed limits established by IRS&T if waste will be transferred to a dedicated clean storage area or transported from the site.

Waste Sampling Request - Requirements provided by Environmental Engineering to Environmental Monitoring for number of samples, type, location, and lab analysis necessary to characterize project waste.

4.0 RESPONSIBILITIES

4.1 **Project Management (PM)** shall be responsible for the following:

4.1.1 Coordinating with representatives of other departments to plan construction waste handling, determine if material is reusable or waste, and discuss waste minimization options.

4.1.2 Initiating a request for RCRA Determination/Radiological Characterization (RD/RC) for a project.

4.1.3 Coordinating delivery of empty waste containers to the project site.

4.1.4 Monitoring subcontractor and FEMP employee compliance with the "Construction Environmental Safety and Health Work Survey" (CESHWS) (see Figure 1) and Construction Waste Identification/Disposition (CWID) (see Figure 2) to ensure contaminated construction waste is handled and packaged in accordance with Standard Operating Procedures.

4.1.5 Maintaining the "Property Disposal Log" and coordinating the sale or disposal of surplus material.

4.1.6 Ensure free liquids are removed from process equipment prior to project start. Provide signed documentation to Environmental Engineering and/or Facilities and Materials Evaluation for RCRA project file.

4.1.7 Ensuring that waste minimization is accomplished.

4.1.8 Obtaining approved on-site disposition locations from Environmental Engineering and Waste Management for waste generated from the project.

4.1.9 Notifying Materials Control and Accountability of the container serial number and getting the inventory number.

4.1.10 Preparing a "Property Disposal Request", Form FMPC-CONT-563 (see Figure 3) per applicable department procedures before equipment (tagged or untagged) is removed.

4.1.11 Instructing subcontractors to segregate clean packing and shipping materials to prevent contact with contaminated waste. Packing materials shall be removed, whenever possible, before entering a radiologically contaminated area.

4.0 RESPONSIBILITIES (cont.)

4.2 Environmental Engineering (EE) shall be responsible for the following:

4.2.1 Developing a RCRA project file for each project.

4.2.2 Ensuring that an adequate waste sampling request is developed.

4.2.3 Coordinating with the Project Management/Project Engineering to review the CWID form.

4.2.4 Responding to waste handling problems on a case-by-case basis.

4.3 Industrial, Radiological Safety and Training (IRS&T) shall be responsible for the following:

4.3.1 Performing preliminary surveys to assist in identifying contaminated locations and the quantity of contaminated construction waste that will be generated. This survey will also be used by Environmental Engineering to determine any sampling locations for waste characterization.

4.3.2 Surveying waste and debris generated during a project for surface contamination prior to releasing it as waste, and monitoring the site for radiological safety purposes.

4.3.3 Sampling asbestos material or material that may contain asbestos.

4.3.4 Arranging for laboratory analysis to determine the presence of asbestos in samples.

4.3.5 Notifying the Project Engineer or Planner/Estimator of asbestos sample analysis results.

4.3.6 Specifying protective equipment required for personnel handling asbestos, RCRA, mixed waste material, and/or radioactive material.

4.4 Environmental Monitoring (EM) shall be responsible for the following:

4.4.1 Developing the Project Sampling Plan as requested by Environmental Engineering, in accordance with departmental procedures.

4.4.2 Taking field samples in accordance with applicable department procedures and the Project Sampling Plan.

4.5 Environmental Restoration shall be responsible for the following:

4.5.1 Providing CERCLA integration guidance.

4.0 RESPONSIBILITIES (cont.)

4.5.2 Maintaining the Administrative Record.

4.5.3 Providing information pertaining to radiological or other hazardous substances contamination from CERCLA activities at the construction area.

4.5.4 Reviewing RSE documents prior to submitting to DOE.

4.6 **Sitewide Quality Assurance (SQA)** shall be responsible for the following:

4.6.1 Inspecting waste containers to verify container integrity.

4.6.2 Verifying preparation of containers before they are filled.

4.6.3 Observing containers being filled with waste and debris to verify adherence to applicable departmental procedures and the CWID.

4.6.4 Completing material identification documentation, obtaining the supervisors signature on the documents, and delivering the documentation to Materials Control and Accountability (MC&A).

4.6.5 Issuing Deviation Reports (DR) and Corrective Action Reports (CR) when waste is not handled in accordance with departmental procedures, the CWID, or CESHWS.

4.6.6 Preparing and issuing a "Sitewide Quality Surveillance Checklist".

4.7 **Materials Control and Accountability (MC&A)** shall be responsible for the following:

4.7.1 Maintaining an inventory of filled containers.

4.7.2 Producing documentation to move filled containers to storage.

4.8 **Maintenance** shall be responsible for the following:

4.8.1 The Site Services Department Maintenance Planner/Estimator shall perform the PM/PE responsibilities as follows:

4.8.1.1 Consulting with representatives of other involved departments to plan waste handling methods, determine material disposition (reusable or waste), and discuss waste minimization options.

4.8.1.2 Initiating RD/RC requests for maintenance projects.

4.0 **RESPONSIBILITIES** (cont.)

4.8.1.3 Monitoring FEMP and subcontractor personnel to ensure that contaminated waste is handled in accordance with applicable departmental SSOPs.

4.8.2 Obtaining approved on-site disposition locations from Environmental Engineering and Waste Management for waste generated from the project.

4.8.3 Ensuring that free liquids are removed from process equipment prior to project start. Provide the signed documentation to Environmental Engineering and/or F&ME for RCRA Project file.

4.8.4 Providing MC&A with the container's serial number, and getting an inventory number from MC&A.

4.9 **Site Services** shall be responsible for the following:

4.9.1 Coordinating delivery of empty containers to the packaging site.

4.9.2 Preparing a designated location for receiving contaminated materials to be stored prior to shipment.

4.9.3 Making the required preparation for International Shipping Order (ISO) (sea/land) container loading.

4.9.4 Providing final closure for ISO containers.

4.9.5 Providing material movement services (including weighing filled containers and delivering containers to and from the site) and providing proper shipping documentation.

4.10 **Waste Management** shall be responsible for the following:

4.10.1 Participating in the development of the Waste Sampling Request and providing concurrence on the final request.

4.10.2 Issuing a RCRA Determination/Radiological Characterization (RD/RC) Letter based on process knowledge and/or sample results.

4.10.3 Identifying disposition locations for all streams.

4.10.4 Shipping materials designated for shipment.

4.10.5 Management of soil and debris which is to be stored at the FEMP.

5.0 GENERAL

5.1 The "Contaminated Waste Packaging Requirements" (see Table 1 for requirements) shall be followed for each type of contaminated waste to be shipped to a DOE burial site.

5.2 Containers that exceed the specified capacity shall be returned to the job site to bring the container within limits.

5.3 The following materials shall not be packaged in box type containers for shipment to a designated DOE burial site.
(A) Resource Conservation and Recovery Act (RCRA) hazardous wastes.
(B) Pressurized vessels
(C) Explosives
(D) Radioactive gases
(E) Pyrophoric materials
(F) Toxic or poisonous substances (except asbestos containing materials)
(G) Reactive material
(H) Liquid metals
(I) Flammable substances
(J) Alkaline metals
(K) Liquid organic waste
(L) Waste containing free liquid, dry powder, or respirable fines that have not been immobilized per NVO-325.
(M) PCBs
(N) Etiologic agents
(O) Chelating agents

NOTE: Packaging of materials listed in 5.3 shall be handled on a case-by-case basis by Environmental Engineering.

5.4 Asbestos shall be packaged in accordance with applicable IRS&T departmental procedures.

5.5 The appropriate CERCLA Programs Operable Unit Manger shall review completed RSE documents to ensure that all CERCLA requirements have been met and then forward the RSE to DOE for review and approval.

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS

None

7.0 PROCEDURE

7.1 Pre-project Planning/Estimating

NOTE: A pre-project meeting attended by departmental representatives involved in the Project shall be held. Project interface requirements shall be addressed and agreed to by all. The meeting may incorporate the project site walkdown to review the project scope for sampling and waste characterization. No excavation, demolition, or penetration activities will be allowed to begin until a RCRA Determination/Radiological Characterization has been completed for the associated project. This includes projects not generating soil, debris, or waste. When an emergency situation occurs and work must begin before the RD/RC is completed, authorization to generate the waste must be obtained from Waste Management.

PROJECT MANAGEMENT & MAINTENANCE (PM&M)

7.1.1 Prepare form FMPC-CONT-563, "Property Disposal Request" (see Figure 3) per applicable department procedures before equipment (tagged or untagged) is removed.

7.1.2 Instruct subcontractors to segregate clean packing and shipping materials to prevent contact with contaminated waste. Packing materials shall be removed, whenever possible, before entering a radiologically contaminated area.

7.1.3 Prepare a draft form FMPC-CONST-2716, "Construction Waste Identification/Disposition" (CWID) sheet (see Figure 2).

NOTE: Accuracy and detail are required in preparing the CWID since the CWID and supporting documentation may be used by the planner/estimator or the subcontractor to estimate the costs associated with handling construction wastes and by F&ME for completion of RD/RC. The CWID is also used to report and quantify the estimated waste versus the actual waste generated at the completion of the project and to quantify the amounts and waste types for use on the CESHWS form (see Table 2 and Figure 1, for requirements).

7.1.3.1 Complete Part II of the CWID using the waste requirements provided.

7.0 PROCEDURE (cont.)

PROJECT MANAGEMENT & MAINTENANCE (PM&M)

7.1.4 Forward preliminary project information to Environmental Engineering.

NOTE: Environmental Engineering will expedite RCRA Determination/ Radiological Characterization (RD/RC).

ENVIRONMENTAL ENGINEERING

7.1.5 Initiate a RCRA Project File for each project.

7.1.6 Issue priorities list for RD/RC and update status information.

7.1.7 Consult with the applicable departments and conduct a project site walkdown.

NOTE: The following groups should be represented: Facility Owner, PM/PE, Radiological Safety, Waste Management, Environmental Monitoring, and CERCLA Program Group (depending on the nature of the project, other groups may also be required).

7.1.8 Document the walkdown using process and historical knowledge.

7.1.9 Submit a request for Radiological Safety to survey the project site.

NOTE: The result of this survey, along with historical and process knowledge, shall be used in the preparation of a Waste Sampling Request.

7.1.10 Complete an "Environmental Media Sampling Request", Form FMPC-EM-3307 (see Figure 4).

7.1.11 Obtain F&ME concurrence with the Waste Sampling Request.

7.1.12 Submit the Waste Sampling Request to Environmental Monitoring.

ENVIRONMENTAL MONITORING

7.1.13 Prepare and obtain approval of a "Construction Excavation/ Penetration Permit", Form FMPC-T-2711 (see Figure 5) for field sampling.

7.1.14 Using the Waste Sampling Request provided by Environmental Engineering, develop the Project Sampling Plan.

7.0 PROCEDURE (cont.)

ENVIRONMENTAL MONITORING

7.1.15 Take samples in accordance with the sampling plan.

7.1.16 Submit samples to the analytical lab for analysis.

7.1.17 Notify Environmental Engineering that sampling is complete and that samples have been sent to the lab.

ENVIRONMENTAL ENGINEERING

7.1.18 Track and expedite lab analysis.

7.1.19 Update information for projects on the RCRA priority list.

ENVIRONMENTAL MANAGEMENT

7.1.20 Perform analysis of samples per the applicable department procedures.

NOTE: Samples may be submitted to an off-site laboratory.

7.1.21 Forward analysis results to Environmental Engineering and Environmental Monitoring.

ENVIRONMENTAL ENGINEERING

7.1.22 Review the analysis results from the lab and complete the RCRA Project File.

7.1.23 Transmit the RCRA Project File to F&ME and the completed analytical data package to Environmental Monitoring.

7.1.24 Using analysis results, update the FEMP Site Sampling Data Base.

WASTE MANAGEMENT

7.1.25 Using the information provided by the RCRA Project File prepare and issue RCRA Determination/Radiological Characterization (RD/RC) letter (see Table 2 and Figure 7 for requirements).

7.1.26 Provide disposition location for all waste streams.

7.0 PROCEDURE (cont.)

PROJECT MANAGEMENT & MAINTENANCE

7.1.27 Revise the CWID based on the RD/RC letter.

7.1.28 Consult with Environmental Engineering and review the CWID form to identify and document the disposition location for each waste.

NOTE: A consideration of waste minimization possibilities shall be included.

7.1.29 Obtain required approvals for the completed CWID.

NOTE: The waste planning phase of a construction project is complete when the CWID is approved and issued.

7.1.30 Contact Environmental Engineering to determine the type of waste containers necessary for packaging contaminated and hazardous waste.

PROJECT MANAGEMENT

7.1.31 Develop a set of excavation and demolition drawings specifying contamination levels for soil and equipment and listing construction wastes, weights, and volumes.

7.1.32 If excavation involves potentially hazardous substances or if more than 1 cubic yard of soil is to be removed, draft an RSE.

7.1.33 Transmit the RSE to the appropriate CERCLA Program Operable Unit (OU) Manager for review.

ENVIRONMENTAL RESTORATION

7.1.34 Review the draft RSE to determine the need for CERCLA removal action.

7.1.35 Submit the RSE to DOE for approval.

NOTE: DOE will determine if a specific CERCLA removal action is required.

7.0 PROCEDURE (cont.)

PROJECT MANAGEMENT

7.1.36 Complete form FMPC-Q-2717, "Construction Environmental Safety and Health Work Survey" (CESHWS) per Project Management department procedure.

7.1.37 Post the CESHWS and supporting documentation in the work area.

7.1.38 Post a "Prohibited Materials List" on the waste containers.

7.2 Controlling and Disposing of Uncontaminated Waste

PROJECT MANAGEMENT

7.2.1 After the project starts, waste and debris shall be handled in accordance with the CESHWS posted in the work area. The CESHWS shall have the completed CWID and all supporting documentation required for waste identification and compliance attached.

7.2.1.1 If changes are required, except for minor modifications in quantities, revise and reissue the CWID and CESHWS with all approvals.

7.2.1.2 In order for bulk material (i.e. soil, concrete, and liquid) from a radioactive material management area to be free-released, analytical data and appropriate process knowledge shall be required in order to obtain approval from Radiation Safety.

7.2.2 Uncontaminated Soil

PROJECT MANAGEMENT

7.2.2.1 Contact Radiological Safety and request that a radiation survey be conducted.

RADIATION SAFETY

7.2.2.2 Survey the truck that is to be loaded to ensure that applicable transportation limits are not exceeded as specified by departmental procedures.

NOTE: If transportation limits are exceeded do not use the truck.

7.0 PROCEDURE (cont.)

RADIATION SAFETY

7.2.2.3 Complete a Radiological Survey Report.

7.2.2.4 Release loaded truck to the designated and marked location as specified by Waste Management for unloading.

NOTE: Soil shall be unloaded in the designated controlled area within one hour. No loads, full or partial, shall sit overnight.

7.2.2.5 Deliver a copy of the Radiological Survey Report(s) to PM.

NOTE: A survey report is required for each load.

7.2.3 Uncontaminated Debris and Waste

PROJECT MANAGEMENT

7.2.3.1 Request that Radiological Safety conduct a survey for unrestricted release.

RADIATION SAFETY

7.2.3.2 Survey the debris and waste to identify contaminated spots.

7.2.3.3 Notify the PM/PE of survey results.

PROJECT MANAGEMENT

7.2.3.4 Consult with the subcontractor to remove and package contaminated waste and debris that may be present in accordance with the CWID or CESHWS.

RADIATION SAFETY

7.2.3.5 Survey the construction site and establish a staging area that will prevent radiological contamination of materials.

PROJECT MANAGEMENT & MAINTENANCE (PM&M)

7.2.3.6 Contact Site Services and arrange for delivery of a lockable dumpster.

7.0 PROCEDURE (cont.)

PROJECT MANAGEMENT & MAINTENANCE (PM&M)

7.2.3.7 Locate the lockable dumpster in the staging area specified by Radiological Safety.

7.2.3.8 As waste and debris is generated, ensure that material is moved to the staging area and placed outside the dumpster until the waste is monitored by Radiological Safety.

NOTE: Waste shall not remain outside the dumpster overnight.

IRS&T

7.2.3.9 Survey collected waste to ensure that no contaminated waste enters the dumpster.

PROJECT MANAGEMENT

7.2.3.10 Have the subcontractor place the verified clean waste into the dumpster.

NOTE: The dumpster shall be picked up after project completion or when the dumpster is full.

7.3 Controlling and Disposing of Contaminated Waste

NOTE: Loose or removable contamination shall be removed (as practicable) prior to demolition or removal of contaminated or hazardous construction waste. Contaminated waste removal shall be coordinated with waste operations high level cleaners and Site Maintenance.

NOTE: Excavation/demolition activities involving contaminated materials shall be accomplished in accordance with the Site Specific Safety and Health Plan (SSHP). The SSHP addresses abatement processes required to protect human health and the environment.

PROJECT MANAGEMENT & MAINTENANCE

7.3.1 Contact Inventory Control and Warehousing and obtain containers required for project.

7.0 PROCEDURE (cont.)

PROJECT MANAGEMENT & MAINTENANCE

7.3.2 Contact Sitewide Quality Assurance and request that waste containers be inspected during preparation and loading.

NOTE: Sitewide Quality Assurance shall be notified at least one hour in advance.

SITEWIDE QUALITY ASSURANCE

7.3.3 Ensure that the container is loaded and secured in accordance with applicable SSOPs (SSOP-0024).

7.3.4 Coordinate with the subcontractor to segregate and package construction waste (Refer to CWID OR CESHWS).

NOTE: Packaging shall be in accordance with the SSHP.

NOTE: Material too large for the designated container shall be reduced in size by the subcontractor.

NOTE: Material designated for future use shall be handled as specified on the CWID.

7.3.5 Install a status indicator on the container.

7.3.6 Complete Form FMPC-CONT-1945-XX, Item Production/Certification/Identification (W-65 card). (See Figure 6)

PROJECT MANAGEMENT & MAINTENANCE

7.3.7 When the container is secure, sign the Item Production/Certification/Identification (W-65 card), most recent update, as "generator".

7.3.8 Coordinate with MC&A to transport waste to the disposition location.

SITE SERVICES

7.3.9 Transport containers from the job site to the scale to be used for weighing.

7.0 PROCEDURE (cont.)

SITE SERVICES

7.3.10 Weigh the material in accordance with SSOP-0024.

NOTE: Waste containers shall be prepared in accordance with SSOP-0024, "Packaging Low Level Radioactive Waste (LLRW) for Offsite Disposal"

7.3.11 Record the weight on the Item Production/Certification/Identification (W-65 card).

7.3.12 Coordinate with MC&A to transport the containers to designated storage location.

7.3.13 Contact MC&A when a box must be emptied for any reason.

PROJECT MANAGEMENT

7.3.14 Prepare a final CWID when the project is complete and submit a copy to F&ME for the RCRA Project file.

8.0 APPLICABLE DOCUMENTS

8.1 Drivers

8.1.1 DOE Order 5480.5, "Radiation Protection of the Public and the Environment"

8.1.2 Title 40 CFR, Parts 260, 261 "Resource Conservation and Recovery Act", and 300, "Comprehensive Environmental Response Compensation Liability Act"

8.2 References

8.2.1 PO-D-035, "Shipment of Low Level Radioactive Waste Requirements"

8.2.2 PP-0314, "Packaging, On-site Movement and Offsite Shipment of Material"

8.2.3 SSOP-0024, "Packaging Low Level Radioactive Waste for Off-Site Disposal"

8.2.4 SSOP-0027, "Control of Box-Type Containers"

9.0 APPLICABLE FORMS

9.1 FMPC-CONST-563, "Property Disposal Request"

9.2 FMPC-PM&A-2716, "Construction Waste Identification and Disposition"

9.3 FMPC-EM-3307, "Environmental Media Sampling Request"

9.4 FMPC-T-2711, "Construction Excavation/Penetration Permit"

9.5 FMPC-Q-2717, "Construction Environmental Safety and Health Work Survey"

9.6 FMPC-CONT-1945-XX, "Item Production/Certification/Identification"

10.0 FIGURES

10.1 Figure 1, "Construction Environmental Safety and Health Work Survey"

10.2 Figure 2, "Construction Waste Identification/Disposition"

10.3 Figure 3, "Property Disposal Request"

10.4 Figure 4, "Environmental Media Sampling Request"

10.5 Figure 5, "Construction Excavation/Penetration Permit"

10.6 Figure 6, "Item Production/Certification/Identification"

10.7 Figure 7, "Construction Waste Requirements"

TABLE 1
CONTAMINATED WASTE PACKAGING REQUIREMENTS

MATERIALS[1]	METAL CONTAINERS	DRUMS	INTERNATIONAL SHIPPING ORGANIZATION (ISO)	CONTAMINATED DUMPSTERS
Metal refuse	Yes	N/A	Yes[2]	N/A
Scrap wood/pallets	Yes	N/A	Yes	Yes
Concrete	Yes	N/A	N/A	N/A
Soil	Yes	N/A	N/A	N/A
Asbestos	Yes	N/A	Yes	N/A
Misc. trash	N/A	N/A	N/A	Yes[2]
Floor sweepings/dust collector residues	N/A	Yes[2]	N/A	N/A

(1) RCRA material shall be handled on a case-by-case basis.

(2) Refer to SSOP-0024 for specific packaging guidelines.

TABLE 2
RADIOLOGICALLY CONTAMINATED AND UNCONTAMINATED CONSTRUCTION WASTE DEFINITIONS AND DISPOSITION REQUIREMENTS

MATERIAL	MAXIMUM CONCENTRATION[1]	
	Category 1	Category 2
Depleted uranium	≤ 100	> 100
Enriched uranium	≤ 100	> 100
Thorium	≤ 50	> 50

[1] In Picocuries per gram (pCi/gm).

Category 1
Less than or equal to 100 pCi/g, nonhazardous

Category 2
Greater than 100 pCi/g, nonhazardous

FEMP

CONSTRUCTION ENVIRONMENTAL SAFETY AND HEALTH WORK SURVEY

This form has been completed for: ☐ Design Purposes ☐ Posting in the Work Area *(The following preparations will be complied with in connection with this work.)*

Emergency Telephone Nos.: _____ Plant Shift Superintendent: _____

ISSUED TO:	WEMCO NO.
PROJECT TITLE:	RUST (W.O.) NO.:
PLANT: PROJECT BOUNDARIES:	TIME DURATION (DATE & TIME): FROM: TO:

This project will be conducted in accordance with OSHA Dept. of Labor 29 CFR, Part 1926, "Safety and Health Regulations for Construction", and "Construction Safety, Health and Fire Protection" and the following specific construction safety requirements.

GENERAL	YES	NO
1. Service process lines, tanks and vessels drained, valved, purged and tagged		
2. Pipelines under pressure, tagged (describe on back sheet)		
* 3. Machinery and equipment safe for work to proceed		
4. Construction excavation/penetration permit required (hidden services - electrical, piping, etc.)		
5. Daily/Weekly renewal of Work Permit by WEMCO necessary		
6. All process equipment, parts and supplies will have been/have been removed or protected by operations		

FIRE PREVENTION	YES	NO
1. Flammable materials in area (describe on back sheet)		
2. Explosive atmosphere test required (to be performed by WEMCO)		
3. Non-sparking tools required		
4. Ample and appropriate fire fighting equipment available		
5. Welding and/or burning required? If welding and/or burning, following provisions required:		
a. Sprinkler system in service		
b. Existing combustible materials will be/have been removed to a safe location or provided with flameproof covers		
c. Welding blankets required		
d. Fire watch required		
* e. Fire Department standby required		

ELECTRICAL	YES	NO
1. Circuits de-energized and tagged per WEMCO Lock & Tag Procedure (if not described on back sheet)		
2. Permanent power sources and switch boxes checked and approved		

CRITICALITY SAFETY	YES	NO
1. Criticality, Nuclear Safety review made		
2. Safety Analysis Review		
3. Special instructions (see reverse side)		

HEALTH PHYSICS	YES	NO
1. Contamination and radiation hazards review made		
2. Special instructions (see reverse side)		

MINIMUM SPECIAL REQUIREMENTS

1. **RESPIRATORS:** ☐ Self Contained ☐ Half Mask ☐ Full Mask ☐ Fresh A
   Type of Canister Cartridge: _____
2. **SPECIAL VENTILATION REQUIREMENTS:**
   Describe: _____
3. **CONFINED SPACE ENTRY PROCEDURE:** ☐ YES ☐ NO
4. **HEAT STRESS CONDITIONS INVOLVED:** ☐ YES ☐ NO

MINIMUM PROTECTIVE EQUIPMENT REQUIRED

☐ Complete dressout with showers	☐ Safety Shoes
☐ Complete dressout without showers	☐ Rubber Shoes
☐ No dressout or showers required	☐ Gloves
☐ Safety Glasses	☐ Acid Suits
☐ Hard Hats	☐ Paper Suits
☐ Face Shields	☐ Air Conditioned Suits
☐ Hearing Protection	☐ Safety Harness
☐ Monogoggles	☐ Corrosive Protection Gear
☐ Other (Description) _____	

CONSTRUCTION RUBBLE DISPOSAL REQUIRED	YES	NO
1. Contamination and radiation review made of rubble		
2. Special instructions (see reverse side)		

INDUSTRIAL HYGIENE	YES	NO
1. Toxicity and health hazards review made		
2. Special instructions (see reverse side)		

ENVIRONMENTAL COMPLIANCE	YES	NO
1. Environmental contamination review required		
2. Special instructions (see reverse side)		

** No answer required if Survey is for "Design Purposes"*

A. For Design Purposes - The undersigned believe that the information provided in this survey is accurate for the conditions expected in the work are during construction. Should additional information which would have a significant impact upon the design become availabl the Survey shall be updated to reflect the changes.

B. For Posting - The undersigned certify that the work area has been cleared for the work indicated. This Construction ES&H Work Survey is valid pursuant t the compliance of the recipients with the conditions stated herein. This Survey shall be voided and a new survey completed for postin should conditions in the work area change and force a modification on the information provided herein.

INDUSTRIAL HYGIENE REP.: PRINTED / DATE:	SAFETY & FIRE REP.: PRINTED / DATE:	WASTE TECHNOLOGY REP.: PRINTED / DATE:	NUCLEAR SYSTEM SAFETY REP.: PRINTED / DATE:
SIGNATURE	SIGNATURE	SIGNATURE	SIGNATURE
WEMCO PROJECT ENGINEER: PRINTED / DATE:	ENVIRONMENTAL COMPLIANCE REP.: PRINTED / DATE:	RADIOLOGICAL SAFETY REP.: PRINTED / DATE:	PRINTED / DATE:
SIGNATURE	SIGNATURE	SIGNATURE	SIGNATURE

FS-F-2717 (REV. 4/20/92)

CONSTRUCTION ENVIRONMENTAL SAFETY AND HEALTH WORK SURVEY
FORM FMPC-Q-2717
Figure 1 (Sheet 1 of 2)

CONSTRUCTION ENVIRONMENTAL SAFETY AND HEALTH WORK SURVEY
(CONTINUED)

1. Initial cuts on ductwork, equipment and piping shall be made by mechanical means only.
☐ YES ☐ NO *(If yes, describe special instructions)* _____

2. Space restrictions:
☐ YES ☐ NO *(If yes, check appropriate restrictions and give details.)* ☐ JOB ACCESS ☐ STORAGE AREA ☐ TOILET FACILITIES

3. Special instructions:
☐ YES ☐ NO *(If yes, give details.)*
OPERATIONAL REQUIREMENTS:

ADDITIONAL JOB HAZARDS *(Not covered on ESAH work release form.)*

GENERAL ITEM NO.:

FIRE PREVENTION ITEM NO.:

ELECTRICAL ITEM NO.:

NUCLEAR AND SYSTEM CRITICALITY SAFETY:

HEALTH PHYSICS:

INDUSTRIAL HYGIENE:

ENVIRONMENTAL COMPLIANCE:

Construction Rubble Disposal Required:

	TYPE OF MATERIALS	APPROXIMATE QUANTITY	DISPOSAL AREA
1.			
2.			
3.			
4.			
5.			

FS-F-2717 Reverse (REV. 4/20/92)

CONSTRUCTION ENVIRONMENTAL SAFETY AND HEALTH WORK SURVEY
FORM FMPC-Q-2717
Figure 1 (Sheet 2 of 2)

FEED MATERIALS PRODUCTION CENTER
CONSTRUCTION WASTE IDENTIFICATION/DISPOSITION FORM

PART I - PROJECT DESCRIPTION

Date ___/___/___

Project Title _____ WBS Project No.: _____

Project Description _____

Project Location (Include location drawings, if possible): _____

Project Engineer/Phone No.: _____/_____ Project Dates: Start ___/___/___ End ___/___/___

PART II - CONSTRUCTION WASTE DETAILS

Date ___/___/___

WASTE TYPE	UNCONTAMINATED WASTE VOLUME Cu. Ft.	UNCONTAMINATED WASTE WEIGHT Pounds	UNCONTAMINATED WASTE DISPOSITION LOCATION*	CONTAMINATED WASTE VOLUME Cu. Ft.	CONTAMINATED WASTE WEIGHT Pounds	CONTAMINATED WASTE DISPOSITION LOCATION*
Soil						
Rubble (concrete,block,etc.)						
Metal						
Process Equipment						
Mixed Solid/Liquid						
Asbestos						
Liquid						
PCBs						
Hazardous/Radioactive Mixed						
Toxic/Radioactive Mixed						
Wood						
Other (specify)						

*Also complete Part III - Future Use Material Ownership and Disposition.

PART III - FUTURE USE MATERIAL OWNERSHIP AND DISPOSITION

OWNER	MATERIAL DESCRIPTION	DISPOSITION LOCATION

c: Manager, Environmental Compliance
Manager, Fire & Safety
Manager, Industrial Hygiene & Safety
Manager, Waste Operations
Manager, RUST ES&M
Manager, Environmental and Radiological Monitoring
Manager, Health Physics
Manager, Quality Assurance
Manager, Waste Technology & Plant Projects
Manager, Maintenance

FMPC-PMS.1-2716 (Rev. 1/6/91)

CONSTRUCTION WASTE IDENTIFICATION/DISPOSITION
FORM FMPC-CONST-2716
Figure 2

Fernald Site
CONTROLLER - GENERAL ACCOUNTING
PROPERTY DISPOSAL REQUEST

JOURNAL VOUCHER NO.: | CONTROL NO.:

FOR GENERAL ACCOUNTING USE ONLY

COST
- Basic .....
- Other .....
- Accumulated Depreciation .....
- Net Book Cost .....

Acquisition Date: | R.U. No.:

Estimated Cost:

Date: _____

SECTION — A

DESCRIPTION | LOCATION

MIMICS NO.: | EQUIPMENT NO.

I.D. NO.: | BAR CODE NUMBER

DOES UNIT CONTAIN PRECIOUS OR CRITICAL MATERIALS?
☐ YES ☐ NO IF YES, TYPE: _____

MANUFACTURER:

MODEL NO.: (If Stores Item, List Stock No.) | SERIAL NO.:

MEF NO. (MATERIAL EVALUATION FORM):

SIZE OR CAPACITY:

	CHECK ONE	
	YES	NO / N/A
Are spare parts available?		
Are manuals available?		
Are spare parts to be excessed?		
Material Evaluation Form		
Material Safety Data Sheet		

SECTION — B

☐ SURPLUS ☐ NON-SURPLUS

PHYSICAL CLASSIFICATION		DISPOSAL CONDITION CODE								
Excess		1	2	3	4	5	6	7	8	9
Salvage										
Scrap										
DOE Scrap Approval										

1 = Unused — good
2 = Unused — fair
3 = Unused — poor
4 = Used — good
5 = Used — fair
6 = Used — poor
7 = Repairs Required — good
8 = Repairs Required — fair
9 = Repairs Required — poor

REASON FOR CLASSIFICATION AS SALVAGE:

REASON TO RECLASSIFY AS SCRAP BY SALVAGE & DISPOSAL SECT.:

REASON FOR CLASSIFICATION AS SCRAP:

CLASSIFIED BY | EXCESS DISPOSAL COORDINATOR & DATE

SIGNATURE & DATE:

APPROVED BY | PROCUREMENT DIRECTOR & DATE

ADP EQUIPMENT: ☐ Information Erased from Hard Disk
☐ Information Not Erased from Hard Disk

SECTION — C

MONITOR DATA
Type of contamination — ☐ Normal; ☐ Enriched; ☐ Depleted; ☐ Other

See attached Radiological Monitoring Data Sheet

INITIATOR	STAFF MANAGER
PRINT OR TYPE:	PRINT OR TYPE:
SIGNATURE:	SIGNATURE:

SECTION — D

RECEIVED RECLAMATION AND DISPOSAL AREA | EXCESS DISPOSAL COORDINATOR & DATE:

REVIEWED BY STOREKEEPER | STOREKEEPER & DATE:

SECTION — E

PREPARATION AND ROUTING:
1. Initiator prepares original and five (5) copies and completes Section A.
2. Initiator contacts the EDC and completes Section B.
3. Initiator has material monitored by ERMT and completes Section C.
4. Initiator has form approved by Staff Manager.
5. Initiator forwards all copies to EDC via Stores Warehouse Supervisor.
6. EDC and Storekeeper complete Section D.
7. All Copies are then sent to Property Accounting who numbers forms and retains original and one copy, sends one copy to originator, one copy to ADP Department Head, and two copies to EDC.
8. Initiator upon receipt of two controlled numbered forms affixes one to excessed items and retains one for record purposes.
9. Initiator calls EDC to coordinate removal of items.

PS-F-603 (REV. 11/13/91)

PROPERTY DISPOSAL REQUEST
FORM FMPC-CONST-563
Figure 3

ENVIRONMENTAL MEDIA SAMPLING REQUEST #_____

(To be completed by requester)

Project Name: _____ Project/WO #: _____

Requester: _____ Phone #: _____

Field Contact: _____ Phone #: _____

Charge #: _____

PROJECT INFORMATION

Regulatory Driver (e.g. RCRA, RI/FS, CERCLA, DOE Order, ARAR's)_____

Objective: _____

Scope of Work: _____

Requested completion date: _____

Location of samples (attach maps, blueprints and/or surveys): _____

Special instructions: _____

* SOLID	** LIQUID	MULTIPHASE/ SLUDGE	ANALYSIS TABLE (see reverse for listing) 1	2	3	4	5	6	7	Archive
Concrete/Asphalt	Drum	Drum								
Soil	Tank	Tank								
Surface	Sump	Sump								
1 ft / 6 ft	Pit	Pit								
2 ft / 7 ft	Basin	Basin								
3 ft / 8 ft	Other	Other								
4 ft / 9 ft										
5 ft / 10 ft										
Paint										
Residue										
Other										

* Soil depths greater than 10 ft attach additional instructions.

** Liquids with greater than .5 % solid per volume are considered multiphase.

Analysis Support Level A B C D E

CONCURRENCE

Environmental Engineering: _____ Date: _____

Facility Material Evaluation: _____ Date: _____

Requester Signature: _____ Date: _____

Date Recieved: _____ Sceduled Start Date: _____ Sceduled Completeion Date: _____

ENVIRONMENTAL MEDIA SAMPLING REQUEST
FORM FMPC-EM-3307
Figure 4 (Sheet 1 of 2)

TABLE 1 TCLP (Full Spectrum)

METALS
- Arsenic
- Barium
- Cadmium
- Chromium
- Lead
- Mercury
- Selenium
- Silver

PESTICIDE/HERBICIDE
- Chlorodane
- 2,4 - D
- Endrin
- Lindane
- Methoxychlor
- Toxaphene
- 2,4,5 - TP Acid- (Silvex)

VOLATILES
- Benzene
- Carbon Tetrachloride
- Chlorobenzene
- Chloroform
- 2 - Butane
- 1,1 - Dichloroethane
- 1,2 - Dichloroethane
- Tetrachloroethylene
- Trichloroethylene
- Vinyl Chloride

SEMI VOLATILES
- 1,4 - Dichlorobenzene
- 2,4 - Dinitrotoluene
- Hexachlorobenzene
- Hexachloroethane
- Hexachloro - 1,3 - Butadiene
- Nitrobenzene
- Pentachlorophenol
- 2,4,5 - Trichlorophenol
- 2,4,6 - Trichlorophenol
- o- Cresol
- m - Cresol
- p - Cresol
- Pyridine

TABLE 2 METALS

__ TCLP __ TOTALS

METALS

Arsenic	Lead
Barium	Mercury
Cadmium	Selenium
Chromium	Silver

TABLE 3 PEST/HERB

__ TCLP __ TOTALS

PESTICIDE/HERBICIDE

Chlorodane	2,4 - D
Methoxychlor	Endrin
Toxaphene	Lindane
2,4,5 - TP Acid- (Silvex)	

TABLE 4 VOA/SEMI VOA

__ TCLP __ TOTALS

VOLATILES
- Benzene
- Carbon Tetrachloride
- Chlorobenzene
- Chloroform
- 2 - Butane
- 1,1 - Dichloroethane
- 1,2 - Dichloroethane
- Tetrachloroethylene
- Trichloroethylene
- Vinyl Chloride

SEMI VOLATILES
- 1,4 - Dichlorobenzene
- 2,4 - Dinitrotoluene
- Hexachlorobenzene
- Hexachloroethane
- Hexachloro - 1,3 - Butadiene
- Nitrobenzene
- Pentachlorophenol
- 2,4,5 - Trichlorophenol
- 2,4,6 - Trichlorophenol
- o- Cresol
- m - Cresol
- p - Cresol
- Pyridine

TABLE 5 RAD

- _ Cs 137
- _ Np 237
- _ Pu 238
- _ Pu 239/240
- _ Ra 226
- _ Ra 228
- _ Ru 106
- _ Tc 99
- _ Th Total
- _ Th 228
- _ Th 230
- _ Th 232
- _ U Total
- _ U 234
- _ U 235/236
- _ U 238
- _ Gross Alpha/Beta

TABLE 7

- _ Paint Filter Liquid Test (PFLT)
- _ pH (If PFLT fails)
- _ Flash Point (If PFLT fails)
- _ HSL
  - _ Full
  - _ Extended
  - _ Abreviated

TABLE 6 TOTAL VOA

- Acetone
- Benzene
- Carbon Disulfide
- Carbon Tetrachloride
- Chlorinated Fluorocarbon
- Chlorobenzene
- Chloroethane
- Chloromethane
- 1,1 - Dichloroethane
- 1,2 - Dichloroethane
- Trans - 1,2 - Dichloroethane
- o - Dichlorobenzene
- 2 - Ethoxyethanol
- Ethyl Acetate
- Ethyl Benzene
- Ethyl Ether
- Isobutanol
- Methanol
- Methyl Isobutyl Ketone
- Methyl Ethyl Ketone
- Methylene Chloride
- Nitrobenzene
- 2 - Nitropropane
- Pyridine
- Tetrachloroethylene
- Toluene
- 1,1,1 - Trichloroethane
- 1,1,2 - Trichloro-1,2,2 - Trifluoroethane
- Trichlorofluoromethane
- Vinyl Chloride
- Xylenes

ENVIRONMENTAL MEDIA SAMPLING REQUEST
FORM FMPC-EM-3307
Figure 4 (Sheet 2 of 2)

FEED MATERIALS PRODUCTION CENTER

CONSTRUCTION EXCAVATION/PENETRATION PERMIT

Issued to: _____ Date Issued: _____

WMCO Permit No.: _____ Subcontractor W.O. No.: _____

WMCO Project/Title No.: _____/_____

Plant: _____ Location: _____

Scope of Work: _____

_____

This permit is issued on the basis of available information, and may not be a complete description of all obstructions. Stop work immediately, and contact the WMCO Project Engineer if obstructions, other than those defined, are encountered.

The following utilities are known to exist in the EXCAVATION/PENETRATION area, and a sketch or drawing defining the same utilities is attached for verification to this permit.

_____

_____

Drawings: _____

_____

Special Hazards and/or Precautions: _____

_____

Disposal of Excavated Material: Yes ____ No ____

If NO is checked, excavated dirt may be used for backfill provided it meets engineering specifications for backfill. Construction Rubble from the EXCAVATION/PENETRATION must be disposed of as described below.

Material Type	Disposal Area	Material Type	Disposal Area
_____	_____	_____	_____
_____	_____	_____	_____

Note: Contractors shall notify appropriate utilities for work outside the plant boundaries in accordance with Ohio Underground Utility Damage Act. All drilling and cutting tools shall be grounded in accordance with OSHA regulations.

The following approvals are required as determined, and checked by the WMCO Project Engineer.

____ Civil Engineer _____ ____ Electrical Engineer _____

____ Utilities Engineer _____ ____ Others _____

The following approvals are required on all CONSTRUCTION EXCAVATION/PENETRATION PERMITS:

WMCO Project Engineer/Phone No.: _____/_____
Operational Supervisor/Phone No.: _____/_____
Waste Mgmt. Operations/Phone No.: _____/_____
Industrial Safety/Phone No.: _____/_____
Health Physics/Phone No.: _____/_____
Env. Compliance/Phone No.: _____/_____

CONSTRUCTION EXCAVATION/PENETRATION PERMIT
FORM FMPC-T-2711
Figure 5

CARD XX **ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION** 159791

P. O. NO.	SOURCE	CLASS	MATERIAL TYPE	LOT SEQUENCE NO.	DATE MO	DAY	YEAR	SHIFT	BADGE NO.	PACKAGE NO.

SEAL NUMBER	SEAL DATE MONTH	DAY	YEAR

WASTE DESCRIPTION AND COMMENTS

PACKAGE TYPE	
PACKAGE SIZE	

PACKAGE PHYSICAL CERTIFICATION	YES	NO
EMPTY CONTAINER AT START		
RUST HOLES OR DENTS		
MATERIAL IS AS CODED		
PROHIBITED MATERIALS		
LIQUIDS IN CONTAINER		
MINIMUM OF VOID SPACE		
PACKAGE SECURED		
DRAIN PLUG SECURED		

PLANT	PROD. MBA
PLANT TO	MBA TO

GROSS WEIGHT

TARE WEIGHT

NET WEIGHT

GENERATOR SIGNATURE

SUPERVISOR SIGNATURE DATE

FMPC-CONT-1945-XX (REV 12/19/88)

☆ U.S. GPO: 1990-751-410

ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION
FORM FMPC-CONT-1945-XX
Figure 6

SOIL, DEBRIS AND WASTE REQUIREMENTS

I SOIL

1. Soils within the Category 1 limits (see Table 2) may be used as backfill on the project or stockpiled in designated Category I soil areas.

2. Soils within Category 2 may be used as backfill or stockpiled in designated Category II soil areas.

3. All soil temporarily stockpiled at the project site during the project will be placed on plywood, tarps, or plastic and covered with plastic sheeting or tarps to prevent wind or rain erosion. Chain link fencing is required around soil piles which are stored for extended periods. Waste Management will determine when fencing is required.

4. When an emergency situation occurs and excavation must be done before characterization can be completed, the soil can be temporarily stockpiled at the project site. The soil will be placed on plastic, tarps or plywood and covered with plastic sheeting or tarps to prevent wind or rain erosion. Soil can be used as backfill, however the excess soil must be characterized. Characterization must be completed immediately after the job has been finished. A project is not considered complete until the excess soil is adequately characterized and removed from the job site. Chain link fencing is required around soil piles which are stored for extended periods. Waste Management will determine when fencing is required.

II DEBRIS

A. RUBBLE

1. All rubble that can not be free released in accordance with IRS&T departmental procedures shall be packaged for shipment to a designated DOE burial site.

B. METAL

1. Metal waste is categorized as recoverable or nonrecoverable. Recoverable metal consists of ferrous (carbon steel material such as structural shapes and piping) and non-ferrous (stainless steel, copper, aluminum, lead, brass, monel inconel, or nickel) material. Nonrecoverable consists of oxidized sheet metal and mixed metals, and metal that cannot be decontaminated to meet free-release limits as specified in IRS&T departmental procedures.

CONSTRUCTION WASTE REQUIREMENTS
Figure 7 (Sheet 1 of 3)

SOIL, DEBRIS AND WASTE REQUIREMENTS

B. METAL

2. Metal can be released for unrestricted use provided that it meets the requirements specified in applicable IRS&T departmental procedures.

3. Contaminated metal that is decontaminated to meet free-release limits specified in IRS&T department procedures shall be released for burial at a sanitary landfill or sold as scrap.

4. Nonrecoverable metal shall be packaged for shipment to a designated DOE burial site.

5. Recoverable metals shall be stored on-site to support the excess metal sales program.

C. PROCESS EQUIPMENT

1. Reusable equipment, such as machine tools, valves, and instruments, shall be classified as future-use material.

2. Equipment that is not re-usable shall be classified by waste type and disposed of in the same manner as other waste.

D. WOOD

NOTE: Pressure-treated wood shall be segregated pending RCRA determination.

1. Wood scrap (such as pallets, crates, form lumber, sheeting, and similar material) generated by construction activities shall be surveyed by Radiological Safety to determine if it meets the requirements specified in department procedures.

   Wood removed during the demolition phase of construction shall be reviewed by the Radiological Safety Lead Technician, on a case by case basis.

2. The Radiological Safety Technician (RST) shall determine if the wood has been exposed to radioactive materials and if the material is surveyable.

   NOTE: Based on RST findings, the wood shall be processed as Low-Level Waste (LLW) or certified clean and free released.

CONSTRUCTION WASTE REQUIREMENTS
Figure 7 (Sheet 2 of 3)

SOIL, DEBRIS AND WASTE REQUIREMENTS

E. ASBESTOS

1. Materials that contain asbestos or that are suspected to be asbestos, shall be handled as asbestos.

2. All asbestos material shall be handled according to applicable IRS&T department procedures.

F. POLYCHLORINATED BIPHENOLS (PCBs)

1. PCB material consists of transformers, capacitors, and similar electrical equipment containing PCBs and material (gloves, rags, spill absorbents) that has been used in removing PCB-containing equipment from service or for clean-up of spills of PCB-containing materials.

2. PCBs shall be packaged and stored at a location specified by Environmental Compliance.

G. OTHER

1. Construction waste (liquid or solid) not specifically categorized on the Construction Waste Identification and Disposition (CWID) form posted in the area shall be handled on a case-by-case basis by Environmental Engineering and Radiological Safety.

2. When hazardous or mixed waste is to be generated on a project, a Material Evaluation Form (MEF) must be completed for that waste stream prior to the generation of the waste.

3. All hazardous and mixed wastes must be containerized and packaged in accordance with applicable site procedures.

CONSTRUCTION WASTE REQUIREMENTS
Figure 7 (Sheet 3 of 3)

RECORD OF ISSUE/REVISIONS

DATE	REV. NO	DESCRIPTION AND AUTHORITY
06-19-92	0	Procedure for controlling and minimizing waste produced by construction and/or maintenance projects, required per Request No. P91-028, initiated by S. Lund.

NON-CONTROLLED COPY

1.0 POLICY

It is the policy of the Westinghouse Environmental Management Company of Ohio (WEMCO) to ensure that the packaging, on-site movement and off-site shipment of hazardous and non-hazardous materials, including radioactive materials, is conducted in a safe manner that provides for the protection of the public and the environment, and is in compliance with the applicable federal, state, and local regulations, Department of Energy (DOE) Orders and Directives, and WEMCO policies and procedures.

2.0 SCOPE

This procedure identifies, defines, and establishes the policies and responsibilities that govern the packaging, on-site movement, and off-site shipment of materials. Provisions of this document are applicable to all WEMCO Sections involved in the packaging, on-site movement, and off-site shipment of non-hazardous materials and hazardous materials, including hazardous substances, hazardous wastes, nuclear, and radioactive materials.

3.0 DEFINITIONS

3.1 Carrier - Any person engaged in the transportation of passengers or property as common, contract, or private charter, or freight forwarder, as defined in the Interstate Commerce Act, as amended, or by the United States Postal Service.

3.2 Consignee - The person or organization designated in the shipping papers to receive a shipment.

3.3 Hazardous Material - A material or substance, including a hazardous substance, which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, or property during transport.

3.4 Hazardous Substance - A material, including its mixtures and solutions, as defined in 49 CFR 171.8, section 101 (14) and 102 of CERCLA, section 311 (b) (2) (a) of the CWA.

3.5 Hazardous Waste - 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.

3.6 Material - For purposes of this procedure, any material classified as non-hazardous items or hazardous materials, including hazardous substances, hazardous wastes, nuclear, and radioactive materials.

3.0 DEFINITIONS (cont.)

3.7 Off-Site - All areas outside the main perimeter security fence that are not controlled at all times by guards and security gates.

3.8 On-Site - All areas inside the main perimeter security fence that are controlled at all times by guards and security gates to gain entrance to the Fernald Environmental Management Project (FEMP) Site.

3.9 Package - A packaging plus its contents as presented for transportation.

3.10 Packaging - The assembly of one or more containers and any other components necessary to ensure compliance with the minimum packaging requirements of 49 CFR.

3.11 Radioactive Material - Any material having a specific activity greater than 0.002 microcuries per gram per 49 CFR.

3.12 Radioactive Source - For the purpose of this procedure any source used as a standard for the radiation it emits sealed in a capsule or having a bonded cover in which the capsule or cover is strong enough to prevent contact with, or dispersion of, the radioactive material under normal conditions of use, including a one-meter drop onto an unyielding surface.

3.13 Radioactive Waste - Solid, liquid, or gaseous material that contains radionuclides regulated under the Atomic Energy Act of 1954, as amended, and of negligible economic value when the costs of recovery are considered.

3.14 Shipment Originator - The person, or WEMCO Section, who initiates an on-site movement or off-site shipment of material.

3.15 Waste Originator - Any person, or WEMCO Section, whose operation or process generates hazardous waste, radioactive waste, or a mixed waste.

3.16 Nuclear Material - Collective term that includes all such materials designated by the DOE. A listing of designated nuclear materials may be found in DOE Order 5633.3; however, at the FEMP site, nuclear materials shall mean depleted, normal, or enriched (less than 20% U-235 by weight) uranium or thorium.

4.0 RESPONSIBILITIES

4.1 Centralized Training - Responsible for the proper development of training activities to comply with mandatory training requirements and to enable employees to qualify, requalify, or enhance their ability to perform job duties and tasks. Responsible for appropriate documentation and maintenance of training activities, development of in-house audio/video training aids, providing assistance in the development/section training, maintaining and administering the TRMS', maintaining the TMR, including the maintenance of subcontractor training records supplied to centralized training by technical instructors or by the manager of the contracting department.

4.2 Maintenance/Garage - Responsible for the inspection of inbound carrier vehicles that will be used for outbound shipments, providing for the inspection used for on-site shipments, and the preventative maintenance of all such government vehicles at FEMP, and documenting all maintenance and inspections.

4.3 Radiological Safety - Responsible for conducting radiological surveys of materials, packages, and carrier vehicles that will be used for outbound shipments, documenting results of surveys, and providing copies of the results as required. Radiological Safety is also to be notified so surveys can be performed on all on-site movements of materials.

4.4 Facilities and Warehousing - Responsible for packaging materials for on-site movement, packaging uranium metals, oxides, and related products for off-site shipment, providing support documentation, and assigning the personnel and equipment required for on-site movements, loading off-site shipments, and spotting/loading carrier trailers and freight containers.

4.5 Material Control and Accountability - Responsible for the nuclear materials control and accountability program at FEMP.

4.6 Procurement/Materials Management - Responsible for the review and approval of off-site miscellaneous shipping documentation.

4.7 Analytical Section (of Site Services) - Responsible for providing analytical documentation of material samples and the packaging of samples for off-site analysis.

4.8 Logistics Administration - Responsible for developing and updating transportation related procedures ensuring compliance with all Federal, State and Local regulations, Doe Orders and Directives.

4.0 RESPONSIBILITIES (cont.)

4.9 Site-Wide Quality Assurance - Responsible for verifying the packaging processes for uranium metals, oxides, and other related materials and for conducting periodic inspections of packaging operations. Coordinate all required Quality Assurance review activities including conducting annual audits of the packaging and transportation of hazard material shipments.

4.10 Radioactive Source Controller - Responsible for controlling and the coordination of radioactive source for shipment off-site.

4.11 Safeguards and Security - Responsible for the coordination of security and safeguard measures for off-site shipments.

4.12 Shipment Originator - Responsible for preparing documentation of materials for on-site movement or off-site shipment.

4.13 Transportation Safety Committee - Responsible for the evaluation of WEMCO policies and procedures for packaging and transport of all materials, exchange knowledge and experience in resolution of transportation safety problems, uniform interpretation and implementation of Federal, State, and Local regulations, including OSHA safety requirements, DOE Orders, and WEMCO guidelines as applicable to transportation safety.

4.14 Traffic Control - Responsible for providing guidance on the requirements for the on-site movement of hazardous materials. Responsible for preparing bills of lading, coordinating the loading of off-site shipments, and coordinating the scheduling of off-site shipments.

4.15 Waste Originator - Responsible for accumulating and packaging waste for storage or disposal and for making the proper notifications when accumulated wastes must be transported to on-site storage facilities.

4.16 Facilities and Material Evaluation - Responsible for providing assistance to waste generators, arranging for waste sampling, and categorizing waste.

4.17 Waste Operations - Responsible for packaging hazardous and radioactive wastes for off-site shipment.

4.18 Waste Shipping Coordinator - Responsible for preparing and reviewing waste shipment documentation for off-site shipments.

4.19 Waste Shipping - Responsible for preparing waste packages and packaging waste for off-site shipment.

4.0 RESPONSIBILITIES (cont.)

4.20 Safe Shutdown - Responsible for controlling order requirements for nuclear materials disposition activities at the FEMP for off-site shipment.

5.0 GENERAL

5.1 Sections responsible for the activities assigned herein shall develop implementing procedures, and perform operational and oversight functions that are consistent with internal WEMCO operating policies and procedures.

5.2 Shipment generators for off-site shipments must prepare a nuclear, radioactive, hazardous material/hazardous waste - non-nuclear, or miscellaneous shipping order and have the order processed and approved by the appropriate sections before material will be set up for off-site shipment. In addition, all packages must have been monitored by the Radiological Safety section for removable contamination, radiation levels, per the applicable departmental procedures and provide appropriate documentation to Traffic Control.

5.3 PACKAGING PROVISIONS

Package Description Per Pkg.	Material Description	Authorized Gross Weight
DOT Spec 17C metal 5-gal. drum (DOT 7A Type A)	samples, bulk type radioactive material	100 lbs.
DOT Spec 17H metal 30-gal. drum (DOT 7A Type A)	samples, bulk type radioactive material	500 lbs.
DOT Spec 17H metal 55-gal. drum (DOT 7A Type A)	samples, bulk type radioactive material	900 lbs.
FEMP Family of wooden Boxes DOT 7A Type A:		
Model No. G-4214	uranium metal products	1,260 lbs.
Model No. G-4245	uranium metal products	225 lbs.
Model No. G-4255	uranium metal products	1,470 lbs.
Model No. G-4273-5	uranium metal products	3,045 lbs.
Model No. G-4273-6	uranium metal products	3,540 lbs.
Model No. G-4292	uranium metal products	1,330 lbs.
Strong Tight Containers	LSA Material consigned as exclusive use Limited Quantity Material	Dependent on container per applicable department procedure

5.0 GENERAL (cont.)

5.3.1 No special packaging provisions are required for the on-site movement and off-site shipment of nonhazardous miscellaneous materials.

5.3.2 PCB substances which are regulated by the Toxic Substances Control Act (TSCA) and the Clean Air Act (CAA) and shall be controlled the same as RCRA waste material.

5.3.3 WEMCO shall respond to incoming emergency calls concerning an accident involving hazardous materials shipped from the FEMP or in transit in the area, supporting the agency with authority, as requested per FMPC-125, "Emergency Management."

6.0 PROCEDURE

6.1 Packaging Operations

CENTRALIZED TRAINING

6.1.1 Approve departmental lesson plans for the personnel in each organization that are involved with the packaging of hazardous materials, hazardous wastes, and radioactive materials.

6.1.2 Verify that the results of lesson plans are documented and that training qualifications records are included in the employee's personnel record and entered into Centralized Training computer files.

ANALYTICAL SECTION (of Site Services)

6.1.3 Analyze the samples to determine the hazardous constituents of the waste.

6.1.4 Document the waste analysis results on the Report of Analysis form.

6.1.5 Provide analytical data to Environmental Management, and the Project Engineer (if requested) for use in characterizing the waste.

6.1.6 Package samples in accordance with applicable Sampling Plan and Departmental procedures. Ensure compatibility of materials in one package meets all criteria of Title 49 CFR, Subpart C, 177.848.

6.0 PROCEDURE (cont.)

ANALYTICAL SECTION (of Site Services)

6.1.7 Request that Radiological Safety monitor the samples and packages according to departmental procedures and provide the appropriate documentation.

SITE-WIDE QUALITY ASSURANCE

6.1.8 For all hazardous and radioactive packaging, verifies compliance with regulations, specifications, plans and procedures through review of documentation, witnessing of activities, and examination. Verifies identification of packaged uranium metals, oxide and related products against the Shipping Order for Nuclear Material. Conduct internal and independent audits of the packaging of hazardous materials including hazardous substances, hazardous wastes, and nuclear and radioactive materials according to the appropriate DOE requirements.

6.1.9 Conduct periodic inspections of packaging operations per applicable departmental procedures, to verify compliance with applicable DOT/DOE/EPA regulations, WEMCO policies and procedures, and document inspections.

6.1.10 Verify that radiological surveys have been conducted for materials.

6.1.11 Review radiological survey results and verify that the radiation readings for packages are within the limits established by 49 CFR; document the review on Form FEMP-IRS&T-1993.

TRAFFIC CONTROL

6.1.12 Verify that hazardous material is packaged for off-site shipment according to the applicable Safety Analysis Report for Packaging and Certificate of Compliance supplied by the Traffic Control.

SHIPMENT ORIGINATOR

6.1.13 Verify that personnel have been properly trained to package hazardous materials, hazardous substances, hazardous wastes, and nuclear and radioactive materials.

6.0 PROCEDURE (cont.)

SHIPMENT ORIGINATOR

6.1.14 Obtain approval from Nuclear Safety before packaging off-site shipments of enriched radioactive materials to ensure criticality concerns are addressed according to applicable regulations. Verify that each package used for on-site movement or off-site shipment of hazardous materials, hazardous substances, hazardous wastes, nuclear and radioactive materials is correctly assembled and that all components of the packaging are sufficiently secured.

6.1.15 Ensure packaging is free of rust, dents or other conditions making it unsuitable for loading material.

6.1.16 Package non-hazardous materials, hazardous materials, hazardous substances, hazardous wastes, and nuclear and radioactive materials for on-site movement or off-site shipment per applicable WEMCO procedures.

6.1.17 Inspect all hazardous materials packages to verify that it has been packaged properly. Notify supervisor if any defects or deficiencies are detected.

6.1.18 Verify that packaging has the capability that will enable the use of mechanical loading equipment, items may be placed on pallets to meet this requirement.

6.1.19 Verify that a radiological survey has been conducted on all packagings that will be used for the off-site shipment of nuclear or radioactive material before the packaging is used.

NOTE: Packagings that are contaminated above the levels specified in Title 49 CFR 173.443 may not be used for off-site shipments unless they are cleaned or refurbished.

6.1.20 Verify that inner packaging is suitably cushioned in the outer packaging with an adequate quantity of material to prevent breaking and shifting during transport, as directed by Traffic Control.

6.0 PROCEDURE (cont.)

SHIPMENT ORIGINATOR

6.1.21 Apply and Verify that all packages for on-site movement or off-site shipping, including samples, are marked and/or labeled according to the requirements of 49 CFR and the written instructions provided by the Traffic Control.

NOTE: Selection of the proper DOT shipping name is based on process knowledge of the waste stream, laboratory analysis, or the Material Evaluation Form provided by EA & QA.

6.1.22 Verify that all packages of material are monitored for external removal contamination and radiation levels.

RADIOACTIVE SOURCE CONTROLLER

6.1.23 Request Radiological Safety to conduct radiological surveys of the radioactive source material and packaging.

6.1.24 Review radiological survey results to verify compliance with applicable regulations.

6.1.25 Maintain constant surveillance of radioactive source material.

WASTE ORIGINATOR

6.1.26 Accumulate and package waste for storage and/or disposal according to all applicable EPA/DOT/DOE regulations and WEMCO procedures.

6.1.27 Notify Facilities and Materials Evaluation when accumulated waste is packaged for on-site storage facilities.

6.1.28 Request radiological surveys of wastes and packages as necessary.

6.1.29 Provide waste tally sheet to Environmental Compliance for use in preparing Material Evaluation forms.

FACILITIES AND MATERIALS EVALUATION

6.1.30 Provide assistance to waste generators with characterization and packaging of wastes for storage and/or disposal.

6.0 PROCEDURE (cont.)

ENVIRONMENTAL COMPLIANCE

6.1.31 Characterize waste according to Resource Conservation and Recovery Act (RCRA) guidelines and DOE requirements based on the results of the waste analysis conducted by Analytical Laboratories.

RADIOLOGICAL SAFETY

6.1.32 Conduct radiological surveys of materials and packages.

6.1.33 Document survey results on the appropriate forms according to departmental procedures.

6.1.34 Forward copies of the surveys to the Shipment Originator, Waste Originator, and Site-Wide Quality Assurance as required.

TRANSPORTATION SAFETY COMMITTEE

6.1.35 Evaluate policies for packaging safety at the FEMP for compliance with applicable federal, state and local regulations.

6.1.36 Ensure packaging policies and practices are conducted in accordance with all FEMP and OSHA safety requirements.

WASTE OPERATIONS

6.1.37 Package hazardous waste and radioactive waste.

6.1.38 Ensure that hazardous waste has been packaged according to EPA/DOT/DOE regulations and WEMCO Guidelines.

6.1.39 Verify that hazardous waste, radioactive, or mixed waste is packaged according to 49 CFR.

6.1.40 Request radiological surveys of packaged waste as required.

WASTE SHIPPING

6.1.41 Prepare waste packaging for use by the Waste Originator according to departmental procedures.

6.1.42 Prepare packages of waste according to departmental procedures and specific consignee requirements.

6.1.43 Request radiological surveys of waste containers as required.

6.0 PROCEDURE (cont.)

6.2 On-Site Movements

CENTRALIZED TRAINING

6.2.1 Approve departmental lesson plans for the personnel in each organization involved with the loading, and transporting of hazardous materials on site, hazardous wastes, and radioactive materials.

6.2.2 Verify that the results of lesson plans are documented and that training qualifications records are included in the employee's personnel record and entered into Centralized Training computer files.

ANALYTICAL SECTION (of Site Services)

6.2.3 Ensure that samples are properly identified and quantified in order to determine on-site transport requirements.

6.2.4 Ensure that temporary storage of samples incidental to transport complies with existing requirements in applicable operating procedures and Nuclear Safety guidelines.

6.2.5 Contact Traffic Control if further guidance is needed when offering samples for on-site movement.

SITE-WIDE QUALITY ASSURANCE

6.2.6 Conduct periodic inspections of on-site shipping operations per applicable departmental procedures to verify compliance with applicable DOT/DOE/EPA regulations, WEMCO policies and procedures, and document inspections. Also conduct internal and independent audits of the on-site transportation of hazardous materials including hazardous substances, hazardous wastes, and nuclear and radioactive materials according to the appropriate DOE requirements.

6.2.7 Sign checksheet/release verifying that all Site-Wide Quality Assurance/Quality Certification functions have been performed and documented for on-site movement as required.

TRANSPORTATION SAFETY COMMITTEE

6.2.8 Evaluate policies for on-site transportation safety at the FEMP for compliance with applicable Federal, State and Local regulations.

6.0 PROCEDURE (cont.)

TRANSPORTATION SAFETY COMMITTEE

6.2.9 Ensure on-site transportation policies and practices are conducted in accordance with all FEMP and OSHA safety requirements.

SHIPMENT ORIGINATOR

6.2.10 Verify that the material is properly identified and quantified to determine on-site movement requirements.

6.2.11 Notify Facilities and Warehousing when the material is ready to be moved.

6.2.12 Attach appropriate transfer documents from Material Control and Accountability when required. Initiate appropriate transfer documents for on-site movement of material from one area to another.

6.2.13 Verify that the storage of materials incidental to transport complies with current requirements contained in the appropriate operating procedures and Nuclear Safety guidelines.

6.2.14 Contact the Traffic Control if further guidance is required when material is moved on-site.

6.2.15 When shipping nonradioactive hazardous materials, initiate form FMPC-OPR-3292, "Hazardous Material Transfer On-site Shipment."

6.2.16 Attach the completed form FMPC-OS&H-1993-1 to the Traffic Control copy of Form FMPC-OPR-3292.

6.2.17 Ensure a signed "Nonradioactive Hazardous Materials Shipment Approval Tag," form FMPC-OPR-2947 is attached to each package when shipping on radioactive hazardous materials on-site.

WASTE ORIGINATOR

6.2.18 Notify Facilities Services, Site-Wide Quality Assurance and MC&A when accumulated packaged waste must be transported to on-site storage facilities.

6.2.19 Request radiological surveys of wastes and packages as required.

6.2.20 Notify Facilities and Warehousing when packaged waste is ready to be transported to on-site storage facility.

6.0 PROCEDURE (cont.)

MAINTENANCE/GARAGE

6.2.21 Inspect, perform preventative maintenance, and repair all government vehicles used for on-site movement of material at FEMP.

6.2.22 Maintain records of services.

6.2.23 Notify government vehicle custodians of scheduled preventative maintenance and safety inspection services.

FACILITIES AND WAREHOUSING

6.2.24 Verify that on-site motor vehicle operators possess a valid state driver's license with the appropriate endorsements.

6.2.25 Verify that on-site motor vehicle operators have been properly trained and qualified according to the responsibilities to be performed.

6.2.26 Motor vehicle operator shall document the inspection results on the appropriate vehicle inspection form (Form OPR 2414), sign the inspection form and submit it to their supervision, and notify supervision of any defective or unsafe vehicle conditions.

NOTE: All defective or unsafe vehicle conditions must be corrected before the vehicle can be used.

6.2.27 Ensure that all packages are marked per applicable departmental procedures.

NOTE: If package markings are illegible or missing, notify supervision per applicable departmental procedure.

6.2.28 Ensure that all hazardous waste packages are labeled with the applicable DOT/EPA/OSHA labels and/or markings.

NOTE: If package labels are illegible or missing, notify supervision per applicable departmental procedure.

6.0 PROCEDURE (cont.)

FACILITIES AND WAREHOUSING

6.2.29 Load the material properly on the transport vehicle and ensure that the material is adequately distributed for weight distribution, stable and secured against shifting during transport.

NOTE: Hazardous materials shall be loaded onto a transport vehicle according to the guidelines provided in the DOT Hazardous Materials Segregation/Separation Chart and in compliance with all applicable Nuclear Safety guidelines.

6.2.30 Deliver the material to the designated delivery point by using the most direct and least congested route.

6.2.31 Prepare depleted, normal, or enriched uranium and other nuclear or radioactive material for on-site movement.

NOTE: Material Control and Accountability (MC&A) documentation must accompany the shipment from one area to the next area when necessary.

6.2.32 Request radiological surveys of materials and packages if not already available.

6.2.33 Review and verify radiological survey results for compliance with the appropriate regulatory requirements.

6.2.34 Assign personnel and equipment for on-site movement as requested.

6.2.35 Provide personnel and equipment for special emergency on-site movement as requested.

TRAFFIC CONTROL

6.2.36 Provide guidance for the required documents, packaging, marking, labeling, and the requirements for the placarding of hazardous materials for on-site movement.

6.2.37 Verify that the appropriate Federal and State Regulations and WEMCO Guidelines are followed for personnel and environmental safety.

6.0 PROCEDURE (cont.)

RADIOLOGICAL SAFETY

6.2.38 Conduct radiological surveys of materials, packages and vehicles on site.

6.2.39 Document the survey results on the appropriate forms according to departmental procedures.

6.2.40 Forward copies of the surveys to the Shipment Originator, Waste Originator, Traffic Control, and Site-Wide Quality Assurance as required.

MATERIAL CONTROL AND ACCOUNTABILITY (MC&A)

6.2.41 Prepare MC&A documentation for on-site movement of material as required.

NOTE: MC&A documents shall be used for verification of the materials and will serve as the shipping papers for on-site movement.

6.3 Off-Site Shipments

CENTRALIZED TRAINING

6.3.1 Approve departmental lesson plans for the personnel in each organization involved with the off-site loading, and transporting of hazardous materials, hazardous wastes, and radioactive materials.

6.3.2 Verify that the results of lesson plans are documented and that training qualification records are included in the employee's personnel record and entered into Centralized Training computer files.

ANALYTICAL SECTION (of Site Services)

6.3.3 Notify Material Control and Accountability and the Traffic Control when a sample containing nuclear radioactive material is to be shipped off-site.

6.3.4 Initiate Shipping Order for Nuclear Material Form, FEMP CONT-558, for samples that are to be shipped to off-site laboratories for analysis

6.0 PROCEDURE (cont.)

ANALYTICAL SECTION (of Site Services)

6.3.5 Forward the shipping order to Material Control and Accountability.

6.3.6 Initiate Shipping Order for Hazardous Material/ Hazardous Waste Non-Nuclear Form, FEMP CONT-3388, for samples that are to be shipped to off-site laboratories for analysis.

6.3.7 Forward the shipping order to Material Control and Accountability.

6.3.8 Verify that the waste samples are in proper packaging for off-site shipment according to departmental procedures.

6.3.9 Generate Form No. FMPC-OPR-2595, Off-Site Loading and Tie Down Inspection.

6.3.10 Maintain and verify the chain of custody transfer for off-site shipment according to applicable procedures.

6.3.11 Request that Radiological Safety monitor the samples and packages according to departmental procedures and provide the appropriate documentation to Traffic Control.

SITE-WIDE QUALITY ASSURANCE

6.3.12 Verify the identification of packaged uranium metals, oxides, and related products with the Shipping Order for Nuclear Material.

6.3.13 Conduct periodic inspections of the shipping operations per applicable departmental procedures to verify compliance with applicable DOT/DOE/EPA regulations and WEMCO policies and procedures and document inspections.

6.3.14 Review the Garage Section incoming vehicle inspection form for vehicle defects or deficiencies.

6.3.15 Attach the Quality Assurance Inspection Sheet, Form QAC-891010-1, Rev 1, to the support documentation for each vehicle loaded.

6.3.16 Verify that radiological surveys have been conducted for each carrier trailer and the materials for off-site shipment.

6.0 PROCEDURE (cont.)

SITE-WIDE QUALITY ASSURANCE

6.3.17 Verify that the exclusive use trailers have been sealed by Radiological Safety and document verification on Form FEMP-ES&H-1956-1.

6.3.18 Review the radiological survey results and verify that radiation readings for packages and the carrier vehicles are within the limits established by 49 CFR; document the review on Form FEMP-IRS&T-1993.

6.3.19 Verify, during the loading of carrier vehicles, that the packaging, marking, labeling, and placarding of off-site shipments are in compliance with 49 CFR; document compliance on appropriate form.

6.3.20 Review all documentation that supports each off-site shipment, including Quality Assurance documentation; document this review on Form QAC-890601-1, Rev. 0.

6.3.21 Sign the appropriate consignee shipment certification (NVO-211) certifying that Low Level Radioactive Waste shipments comply with the waste acceptance criteria established by the consignee.

6.3.22 Sign the shipping order verifying that all Site-Wide Quality Assurance/Quality Certification functions have been performed and documented for off-site shipments as required.

6.3.23 Coordinate all Quality Assurance review activities with the appropriate WEMCO sections and conduct internal and independent audits of the packaging and transportation of hazardous materials including hazardous substances, hazardous wastes, and nuclear and radioactive materials according to the appropriate DOE requirements.

RADIOLOGICAL SAFETY

6.3.24 Conduct radiological surveys of materials and packages in accordance with applicable departmental procedures.

6.3.25 Coordinate the radiological survey of inbound carrier vehicles, with the Traffic Control, before and after loading, and prior to release from FEMP.

6.0 PROCEDURE (cont.)

RADIOLOGICAL SAFETY

6.3.26 Document the survey results on the appropriate forms according to departmental procedures.

6.3.27 Forward copies of the surveys to the Shipment Originator, Waste Originator, Traffic Control, and Site-Wide Quality Assurance as required.

SHIPMENT ORIGINATOR

6.3.28 Provide the Traffic Control with the required advance notification of off-site shipment.

6.3.29 Verify that material is properly identified and quantified.

6.3.30 Provide the Traffic Control with the information required to determine the appropriate DOT requirements for the shipment.

6.3.31 Notify Facilities and Warehousing when the material is prepared for loading or movement to the designated area for off-site shipment.

6.3.32 Provide Facilities and Warehousing with the documentation that designates the location on-site where the material for off-site shipment is to be picked up, location on-site where the material for off-site shipment is to be delivered, and the name and quantity of the material to be moved.

6.3.33 Provide any additional information required to the transporter to facilitate the safe loading and movement of material.

6.3.34 Verify that the temporary storage of materials incidental to off-site transport is in compliance with the existing requirements of the appropriate operating procedures and Nuclear Safety guidelines.

6.3.35 Prepares Product Order per FMPC-714 for proposed shipments of nuclear product material.

6.3.36 Initiate Shipping Order for Nuclear Material (Form FMPC Cont-558) for nuclear materials that are to be shipped off-site and forward shipping order to Materia Control and Accountability.

6.0 PROCEDURE (cont.)

SHIPMENT ORIGINATOR

6.3.37 Initiate Shipping Order for hazardous Material/Hazardous Waste - non-nuclear (Form FMPC Cont-3388) for all hazardous non-nuclear material that is to be shipped off site and forward shipping order to Material Control and Accountability.

6.3.38 Initiates Miscellaneous Shipping Order (FMPC-ADMS-871) and obtains applicable approvals for all non-nuclear nonhazardous material shipments. Forwards approved Miscellaneous Shipping Order (MSO) to the Traffic Control.

6.3.39 Request radiological survey results of materials and packages to ensure compliance with applicable regulations and site procedures.

6.3.40 Notify and obtain approval of site-wide Quality Assurance/ Quality Certification for shipments of nuclear material.

6.3.41 Obtain Radiological Safety sign-off for nonradioactive material on a Miscellaneous Shipping Order.

6.3.42 Obtain Environmental Compliance sign-off for nonhazardous material on a Miscellaneous Shipping Order.

6.3.43 Provide Traffic Control with the information necessary to the applicable DOT requirements and prepare the bill of lading.

6.3.44 Contact the Traffic Control for further guidance when preparing material for off-site shipment.

FACILITIES AND WAREHOUSING

6.3.45 Verify that the transport vehicle is appropriate for the weight and center of gravity of the material to be loaded.

6.3.46 Inspect the transport vehicle and record the findings of the inspection.

6.3.47 Accept or reject equipment based on the vehicle inspection.

6.3.48 Position packages on the vehicle so that the weight is equally distributed over the width and length of the vehicle and as equally as possible among the vehicle's axles.

6.0 PROCEDURE (cont.)

FACILITIES AND WAREHOUSING

6.3.49 Ensure the load is placed on the vehicle in such a manner that it does not obscure the driver's view ahead or to the right or left sides, interfere with the free movement of his arms or legs, prevent his free and ready access to accessories required for emergencies, or prevent the free and ready exit of any person from the vehicle's cab or driver's compartment.

6.3.50 Ensure that all loading of hazardous materials, hazardous substances, hazardous wastes, and radioactive materials is conducted according to the guidelines provided in the DOT Hazardous Materials Segregated/Separation Chart in compliance with all applicable Nuclear Safety guidelines.

6.3.51 Block and brace all packages on or in the vehicle to prevent shifting or changing of position during normal transportation conditions, and in such a manner that the packages will remain stable after the restraints are removed prior to unloading the packages.

NOTE: Do not rely upon the ends, sides, or doors of the vehicle to prevent shifting of heavy loads unless they are specifically designed for this purpose.

6.3.52 Ensure that all sides, sideboards, rear endgates and endboards capable of preventing packages shifting are in their proper place and are strong enough and high enough to ensure that packages will not shift upon, or fall from the vehicle.

6.3.53 Use as many tiedown assemblies to secure all packages being transported on vehicles which are not equipped with sides or sideboards, and rear endgate or endboard as directed by applicable FEMP procedures.

6.3.54 Use only tiedown assemblies that conform to the rules of 49 CFR 393.102; plastic or fiber rope, any material with unknown strength or any damaged materials shall not be used as components of a tiedown system.

6.3.55 Tiedown assemblies will be installed to ensure the load will not move or shift during normal transport.

6.0 PROCEDURE (cont.)

FACILITIES AND WAREHOUSING

6.3.56 Ensure the principal tiedown forces are transmitted to the vehicle's frame rather than the wood or metal decking, and that the strength of the tiedown attachment points on the vehicle are equal to or greater than the strength of the tiedowns.

6.3.57 Ensure that flexible tiedowns (e.g., rope, strap, chain, etc.) are free from contact with any other stationary objects when they are taut to prevent chafing and damage during transport.

6.3.58 Visually check all packages before loading to ensure no defects are present.

6.3.59 Complete and submit the Off-Site Loading and Tie-Down Inspection Form to the Traffic Control when necessary.

6.3.60 Review and verify the radiological survey results for compliance with the appropriate regulatory requirements.

6.3.61 Submit appropriate paperwork to Traffic Control after loading.

6.3.62 Assign personnel and equipment for loading off-site shipments as required.

6.3.63 Assign personnel and equipment for spotting/loading of carrier trailers and freight containers used for off-site shipments.

PROCUREMENT/MATERIALS MANAGEMENT

6.3.64 Review and approve Miscellaneous Shipping Orders (MSO) and other documentation for off-site shipment of non-hazardous materials.

6.3.65 Forward approved copies of the Miscellaneous Shipping Order (MSO) to the Traffic Control.

6.3.66 Verify, using the appropriate shipping order, that the packages of material are identified as on the shipping order.

6.3.67 Attach the required markings, labels, and tally sheet to the packages of hazardous materials adhering to departmental procedures and direction by Traffic Control.

6.0 PROCEDURE (cont.)

MAINTENANCE/GARAGE

6.3.68 Inspect the inbound carrier vehicles that will be used for off-site shipments according to Federal Motor Carrier Safety Regulations and WEMCO procedures.

6.3.69 Document the inspection results on the FEMP Preliminary Visual Trailer Inspection Form with appropriate comments.

6.3.70 Forward copies of the maintenance and inspection documents to Site-Wide Quality Assurance and Facility Service and Support Sections.

6.3.71 Inspect, lubricate, perform the preventative maintenance for, and repair all government vehicles used for loading off-site shipments at FEMP.

6.3.72 Maintain records of services.

6.3.73 Notify the government vehicle custodians of scheduled preventative maintenance and safety inspection services.

TRAFFIC CONTROL

6.3.74 Provide guidance for the required documents and the requirements for the placarding of off-site shipments.

6.3.75 Verify compliance with appropriate Federal and State Regulations and WEMCO Guidelines.

6.3.76 Coordinate the scheduling of off-site shipment with the Shipment Originator, Site Services, and the carrier.

6.3.77 Coordinate the loading of off-site shipment with Site Services, Facilities and Warehousing, and the carrier.

6.3.78 Review shipping documents for completeness, proper authorization(s), and compliance with WEMCO policy, procedures, and accounting requirements.

6.3.79 Ensure that all off-site shipments are in compliance with legal restrictions on weight and dimension prior to release.

6.0 PROCEDURE (cont.)

TRAFFIC CONTROL

6.3.80 Prepare the Uniform Hazardous Waste Manifest according to the requirements of 40 CFR and the appropriate departmental procedures using documentation provided by the Shipping Originator and WEMCO support sections.

6.3.81 Prepare and sign the bill of lading according to the requirements of 49 CFR using documents provided by the Shipping Originator and WEMCO support sections.

6.3.82 Obtain the signature of the carrier's agent (driver) on all bills of lading and hazardous waste manifests to acknowledge receipt of the shipment by the carrier.

6.3.83 Use only ICC and PUCO approved commercial or contract carriers according to the appropriate DOE requirements.

NOTE: Commercial or contract carriers must have received an identification number from the Administrator of the USEPA. Additionally, State EPA identification numbers must be obtained from the Administrator of the State EPA Office when required.

6.3.84 Issue the appropriate shipment notifications to consignees.

6.3.85 Return the shipping order and notify Material Control and Accountability when a shipment of hazardous material, hazardous waste (non-nuclear), or nuclear material is shipped from FEMP.

TRANSPORTATION SAFETY COMMITTEE

6.3.86 Evaluate policies for off-site transportation safety at the FEMP for compliance with applicable Federal, State and Local regulations.

6.3.87 Ensure off-site transportation policies and practices are conducted in accordance with all FEMP and OSHA safety requirements. Conduct periodic inspections and evaluations of all activities associated with the handling and transporting of hazardous materials for off-site shipments.

6.0 PROCEDURE (cont.)

SAFEGUARDS AND SECURITY

6.3.88 Provide interpretation and advice concerning the security and safeguard measures required for off-site shipment of classified or strategic nuclear materials.

6.3.89 Coordinate with Traffic Control to spot incoming carrier vehicles for inspection by the Maintenance Garage and to have the radiological survey conducted.

6.3.90 Verify that vehicle doors are properly secured.

6.3.91 Verify that the seal number, when recognizable, matches the serial number on the bill of lading before the shipment leaves the FEMP site.

6.3.92 Verify that the bill of lading has been signed by the Traffic Control authorizing the shipment to be released.

6.3.93 Coordinate emergency response activities for off-site shipments with the Emergency Operations Center as required.

MATERIAL CONTROL AND ACCOUNTABILITY (MC&A)

6.3.94 Verify that the consignee is authorized to receive the specific nuclear materials before the materials are shipped.

6.3.95 Process, verify the type of material and lot numbers, and approve the Shipping Order for Nuclear Material Form, FEMP CONT-558, for off-site shipment of nuclear material.

6.3.96 Forward the shipping order to the Traffic Control.

6.3.97 Process, verify the type of material and lot numbers, and approve the Shipping Order for Hazardous Material/ Hazardous Waste Non-Nuclear Form, FEMP CONT-3388, for off-site shipment of material.

6.3.98 Forward the shipping order to the Traffic Control.

6.3.99 Receive shipping order from Traffic Control.

6.3.100 Notify the consignee that the preparation for off-site shipment has been completed.

6.0 PROCEDURE (cont.)

MATERIAL CONTROL AND ACCOUNTABILITY (MC&A)

6.3.101 Prepare and forward to the consignee, DOE/NRC Nuclear Materials Transaction Report, Form 741, for off-site shipments.

NOTE: These documents are used for verification of materials and shipping paper by Facility Site Services for material transport.

RADIOACTIVE SOURCE CONTROLLER

6.3.102 Notify the Traffic Control of the intent to ship radioactive source material off-site.

6.3.103 Provide copy of the purchase order to the Traffic Control.

6.3.104 Request Radiological Safety to conduct radiological 48-hour surveys of the radioactive source material and packaging.

6.3.105 Review the radiological survey results to verify compliance with applicable departmental procedures.

6.3.106 Initiate Shipping Order for Hazardous Material/Hazardous Waste Non-Nuclear Form, FEMP CONT-3388, after approval from EC&QA.

6.3.107 Notify the Traffic Control when the packaged material is ready to be shipped off-site.

6.3.108 Maintain constant surveillance of radioactive source material until it is loaded onto the transport vehicle for off-site shipment.

6.3.109 Remove the radioactive source material shipped from the inventory list.

WASTE OPERATIONS

6.3.110 Package hazardous waste and radioactive waste for off-site shipments.

6.3.111 Verify that hazardous waste for off-site shipment has been packaged according to EPA/DOT/DOE regulations and WEMCO Guidelines.

6.3.112 Request radiological surveys of packaged waste as required per applicable departmental procedures.

6.0 PROCEDURE (cont.)

WASTE SHIPPING COORDINATOR

6.3.113 Prepare and forward the Storage and Disposal Data Sheet, the Tally Sheet, and other documents as required to Site-Wide Quality Certification for review and approval.

6.3.114 Prepare additional shipping documentation according to consignee requirements.

NOTE: Consignee requirements must exceed the requirements of 49 CFR.

6.3.115 Receive the documentation associated with off-site shipment from the appropriate departments.

6.3.116 Forward the documentation to Site-Wide Quality Assurance for review.

WASTE SHIPPING

6.3.117 Prepare waste packaging for use by the Waste Originator according to departmental procedures.

6.3.118 Prepare packages of waste for off-site shipping according to departmental procedures and specific consignee requirements.

6.3.119 Request the radiological survey of waste containers as required.

SAFE SHUTDOWN

6.3.120 Prepares Nuclear Materials Disposition Order (NMDO) per PP-5031 for proposed shipments of nuclear materials.

6.3.121 Acts as liaison internally to facilitate shipment and externally to ensure customer satisfaction.

6.3.122 Tracks NMDO through completion, issues completion notice and maintains documentation on activity.

7.0 APPLICABLE DOCUMENTS

7.1 Drivers

7.1.1 DOE 1540.1, "Materials Transportation and Traffic Control Management"

7.0 APPLICABLE DOCUMENTS (cont.)

7.1.2 OR 1540.1B, "Materials Transportation and Traffic Control Management"

7.1.3 DOE 1540.2, "Hazardous Material Packaging for Transport - Administrative Procedures"

7.1.4 DOE 1540.3, "Base Technology for Radioactive Material Transportation Packaging Systems"

7.1.5 DOE 5000.3A, "Occurrence Reporting and Processing of Operations Information"

7.1.6 DOE 5480.3, "Safety Requirements for the Packaging and Transportation of Hazardous Materials"

7.1.7 DOE 5632.1, "Physical Protection of Classified Matter and Information"

7.1.8 DOE 5632.2A, "Physical Protection of Special Nuclear Material and Vital Equipment"

7.1.9 DOE 5700.6B, "Quality Assurance"

7.1.10 DOE/EV 06194-3, "Explosives Safety Manual"

7.1.11 DOE 5480.19 "Conduct of Operations"

7.1.12 10 CFR Part 71, "Packaging of Radioactive Material for Transport and Transportation of Radioactive Material Under Certain Conditions"

7.1.13 40 CFR Parts 116 -117, "Designation of Hazardous Substances and Their Reportable Quantities"

7.1.13 40 CFR Parts 260-265, "Standards Applicable to Hazardous Wastes"

7.1.14 49 CFR Parts 100-199, "Hazardous Material Regulations"

7.1.15 49 CFR Parts 383-397, "Federal Motor Carrier Safety Regulations"

7.1.16 International Atomic Energy Agency (IAEA) "Safety Series No. 6," 1985 Edition, as amended

7.0 APPLICABLE DOCUMENTS (cont.)

7.1.17 International Air Transport Association (IATA) "Dangerous Goods Regulations," 1991 Edition

7.1.18 International Civil Aviation Organization (ICAO) "Technical Instructions," 1985 Edition

7.1.19 American National Standards Institute (ANSI) N14 Series

7.1.20 Directory of DOE Certificates of Compliance for Radioactive Materials Packaging

7.2 Reference Documents

THIS SECTION WILL CONTAIN A LIST OF APPLICABLE WEMCO PROCEDURES.

8.0 APPLICABLE FORMS

THIS SECTION WILL CONTAIN A LIST OF APPLICABLE WEMCO FORMS AND FORM NUMBERS.

9.0 ATTACHMENTS

None

RECORD OF ISSUE/REVISIONS

DATE	REV. NO	DESCRIPTION AND AUTHORITY
12-20-91	0	Document describing how on-site and off-site materials are packaged and moved per Request No. P91-387, initiated by J. McGrogan.

NOTE: WARNINGS, CAUTIONS and NOTES precede the step to which they apply.

NON-CONTROLLED COPY

1.0 PURPOSE

The purpose of this document is to establish the procedure for overpacking defective containers.

2.0 APPLICABILITY

This procedure shall apply to material containers which are defective or unacceptable for storage.

3.0 RESPONSIBILITY

3.1 The supervisor shall be responsible for the following:

3.1.1 Ensuring that personnel are qualified per the existing training requirements identified by the Department/Staff Manager.

3.1.2 Final determination to overpack a container.

3.1.3 If multiple containers are to be overpacked into a single overpack drum, ensuring that defective containers contain compatible materials.

3.1.4 Designating appropriate lifting device.

R 3.1.5 Supplying the Materials Control and Accountability (MC&A) Specialist
R with recorded information taken from container(s) including forms referred to in 8.1 and 8.2.

3.1.6 Contacting Industrial Hygiene or Radiological Safety to determine the appropriate respiratory protection for the process being performed.

3.1.7 Providing operators with the required respiratory protection.

3.1.8 Immediately notifying the Assistant Emergency Duty Officer (AEDO) and submitting a Minor Event Report (MER) in the event of a hazardous material spill or abnormal event.

3.2 Materials Control & Accountability (MC&A) shall be responsible for reconciling and maintaining the inventory records of materials at the applicable location.

3.3 Operators shall be responsible for complying with this procedure.

R - MATERIAL REVISED, ADDED, OR DELETED.

4.0 DEFINITIONS

4.1 Overpack Drum - A drum into which one or more smaller defective containers are placed.

4.2 Defective Container - A container with holes, dents, bulges and/or corrosion which is unacceptable for storage of material.

4.3 Overpack Tare Weight - The sum of the tare weight(s) from the defective container(s) plus the tare weight of the overpack drum.

4.4 Overpack Net Weight - The overpack gross weight minus the overpack tare weight.

4.5 Overpack Gross Weight - The weight of the completed overpack; defective container(s) plus overpack drum.

5.0 REFERENCES

5.1 SOP 20-C-602, "Inspection and Operation of Nilfisk Portable Vacuum Units"

5.2 SOP 20-C-904, "General Nuclear Safety Requirements"

R 5.3 RM-0005, "FEMP Lot Marking and Color Coding System"

5.4 SOP 20-C-606, "Hazardous Material Spill Cleanup"

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS

6.1 A defined safety system is not involved.

6.2 Safety glasses with side shields shall be worn unless other eye protection is specified.

6.3 Respiratory protection provided by the supervisor shall be worn when required.

6.4 Leather-palm gloves shall be worn to protect the hands from rough or sharp edged material and possible contamination.

6.5 A NILFISK HEPA type filter vacuum cleaner shall be used in accordance with SOP 20-C-602, or a vacuum system approved by IRS&T, when cleanup is required.

6.6 As applicable, nuclear safety requirements of SOP 20-C-904 shall be followed in the handling of depleted, normal, and/or enriched material.

R - MATERIAL REVISED, ADDED, OR DELETED.

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS (cont.)

6.7 Any release of hazardous material shall be reported immediately per SOP 20-C-606.

6.8 Any circumstance which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake to IRS&T Radiological Safety Section for evaluation. The involved personnel shall report to the Urine Sampling Station at the end of their shift to complete a Incident Investigation Report (IIR) (Form FMPC-ES&H-1458), and submit an incident urine sample. The involved personnel shall also report to the Urine Sampling Station at the start of their next shift to submit a followup urine sample. Employees are responsible for complying with additional requirements as specified by the Radiological Safety Section.

7.0 PROCEDURE

7.1 Overpacking into Drums

7.1.1 Prepare loading area by laying down a tarpaulin, plastic sheet, or other equivalent material on ground.

7.1.2 Select defective containers to be overpacked.

NOTE: If multiple containers are to be overpacked into a single overpack drum, supervisor shall ensure that defective containers contain compatible materials.

NOTE: If defective containers are vented, supervisor shall ensure overpack drums are vented.

7.1.3 Inspect the area around the defective container(s). If material is visible around the container(s), notify the supervisor.

NOTE: Leaking container(s) shall be overpacked within 24 hours from time of discovery.

NOTE: The supervisor shall report the spill and direct spill cleanup per SOP 20-C-606.

NOTE: HEPA filtered vacuum systems shall not be used if the HEPA test has expired or test sticker is broken.

CAUTION: CAREFULLY MOVE THE DEFECTIVE CONTAINERS(S) TO PREVENT FURTHER DAMAGE.

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7.0 PROCEDURE (cont.)

7.1.4 Move defective containers to loading area.

NOTE: Containers loaded on a pallet for transport shall be strapped.

R 7.1.5 Complete "Container Overpack Information" sheet, Form FS-F-2987 (See Figure 1) with data from defective container(s).

7.1.5.1 If the information which appears on the defective drum(s) is illegible and/or non-existent, contact supervisor.

NOTE: Supervisor shall contact IRS&T, SWC, Transportation or MC&A as applicable for assistance in identifying material/container markings.

7.1.6 Prepare new markings/labels for the overpack drum identification by using the markings/labels on the defective container(s).

R 7.1.7 Transmit overpack form to MC&A Specialist's Office for verification.

7.1.7.1 If the form is acceptable, proceed to step 7.1.8.

7.1.7.2 If the form is not acceptable, correct any discrepancies with assistance from MC&A. Notify supervisor as necessary.

7.1.8 Obtain required overpack drum according to material compatibility and defective container size.

7.1.9 Inspect overpack drum to ensure no dents, holes, or corrosion is present.

7.1.9.1 If damage/corrosion is present, notify supervisor.

7.1.10 Ensure scale to be used has been inspected and calibrated per the applicable SOP for the scale to be used.

7.1.11 Tare weigh the empty overpack drum and record the overpack drum tare
R weight on overpack form.

7.1.12 Move the empty overpack drum to the loading area.

7.1.13 Remove the gasket, locking ring, and lid.

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7.0 PROCEDURE (cont.)

7.1.14 Ensure that the forklift/or hoist and lifting device specified by supervisor has been checked per the applicable SOP.

CAUTION: **KEEP FINGERS OUT OF PINCH POINTS WHILE LOWERING DEFECTIVE CONTAINER(S) INTO OVERPACK.**

7.1.15 Using the specified forklift/or hoist and lifting device, place defective container(s) into the overpack drum (See Figure 2 for the primary equipment utilized for this task).

NOTE: Other lifting equipment may be utilized with the approval of the immediate supervisor and IRS&T.

7.1.16 Check condition of gasket, lock ring, and drum lid. Replace damaged items.

7.1.17 Seat lid and gasket evenly on overpack drum.

7.1.18 Place locking bolt ring around lid of overpack drum ensuring the flanges point downward from the lock ring.

NOTE: Locking bolt shall be positioned no more than six inches from the seam of the drum.

7.1.19 Install locking bolt shaft through the unthreaded flange, locking nut, and threaded flange (See Figure 3), so that the locking bolt head rests against unthreaded flange.

7.1.20 Tighten the locking bolt or latch lever lock.

7.1.21 Manually tighten the locking nut against the threaded flange.

7.1.22 Using a wrench, tighten the locking nut against the threaded flange an additional 1/4 turn.

R 7.1.23 Weigh the completed overpack and record the overpack gross weight on overpack form (See Figure 1).

7.1.24 Calculate overpack tare and net weights.

NOTE: Overpack Tare Weight is the sum of the tare weight(s) from the defective container(s) plus the tare weight of the overpack drum.

NOTE: Overpack Net Weight is the overpack gross weight (Step 7.1.23) minus the Overpack Tare Weight.

R - MATERIAL REVISED, ADDED, OR DELETED.

7.0 PROCEDURE (cont.)

R 7.1.25 Record the overpack tare weight and the overpack net weight on overpack
R form (See Figure 1).

R 7.1.26 Using information from the overpack form, stencil/paint the required identification per Figure 4, using applicable section number.

NOTE: Paint sticks may be used until proper stenciling can be performed.

NOTE: Stencil or marking shall be legible block letters, 1-1/2 inches in height (minimum).

NOTE: The drum labeling arrangement in Figure 4 is effective upon date of issue of this procedure. Drums labeled prior to this date shall not require relabeling.

7.1.26.1 If the overpack drum contains non-RCRA material or uncharacterized material, stencil/paint the FMPC Lot Marking Code followed by the drum number using two lines as shown in Figure 4, Section 1.

7.1.26.2 If the overpack drum contains RCRA material, stencil/paint the FEMP Lot Marking Code followed by the drum number using one line as shown in Figure 4, Section 2.

7.1.27 Affix all markings/labels previously prepared (See step 7.1.6) to the overpack drum in accordance with Figure 4 per the applicable section number.

R 7.1.28 Transmit overpack form to the supervisor or the applicable MC&A Specialist.

7.1.29 Move the overpack as instructed by the supervisor and record location on the "Permanent Inventory Record", Form FMPC-CONT-367 (See Figure 5) and transmit to MC&A.

NOTE: Containers loaded on a pallet for transport shall be strapped.

7.2 Overpacking into Double Lid Drums

7.2.1 Complete steps 7.1.1 thru 7.1.12.

7.2.2 Stencil "TOP" on side of the overpack drum, left of center, and near top bolt ring. Stencil "BOTTOM" on side of the overpack drum, left of center, and near the bottom bolt ring (See Figure 4, Section 6).

R - MATERIAL REVISED, ADDED, OR DELETED.

7.0 PROCEDURE (cont.)

7.2.3 Remove the bolt ring, gasket, and lid from drum end marked "BOTTOM".

7.2.4 Place a pallet in the loading area.

7.2.5 Place a 24 inch x 1-1/2 inch plywood disk on top of the pallet.

7.2.6 Check condition of gasket, bolt ring and drum lid. Replace damaged items.

7.2.7 Place the overpack drum bottom lid on top of the plywood disk with the inside of the lid facing up.

7.2.8 Place locking bolt ring around the lid of the overpack drum ensuring the flanges point upward from the lock ring (See Figure 4).

NOTE: Locking bolt shall be positioned no more than six inches from the seam of the drum.

CAUTION: CAREFULLY MOVE THE DEFECTIVE CONTAINER(S) TO PREVENT FURTHER DAMAGE.

7.2.9 Using the specified forklift/or hoist and lifting device, center the defective container(s) on the disk/lid.

7.2.10 Using the lifting device, place the overpack drum with a lid assembly on the end of the drum marked "TOP", over the defective container(s).

7.2.10.1 Seat overpack drum evenly on lid and gasket.

7.2.11 Complete steps 7.1.19 thru 7.1.22.

7.2.12 Remove the bolt ring, gasket, and lid from drum end marked "TOP".

7.2.13 Complete steps 7.1.16 thru 7.1.29.

7.3 Overpacking into Vented Single Lidded Drums

NOTE: Supervisor shall specify the method used to make the vent holes in the overpack drum.

7.3.1 Complete step 7.1.1 thru 7.1.13.

7.0 PROCEDURE (cont.)

7.3.2 Using the method specified by supervisor, make two 1/4 inch to 1 inch holes (180 degrees apart) in the side of the drum approximately 1 inch below the top rim of the overpack drum ensuring vent holes do not interfere with the lock ring (See Figure 4, Section 3).

7.3.4 Using a stencil and white paint, mark the side of the drum with the word "Vent" to indicate the drum has been vented.

NOTE: The word "Vent" shall be 1-1/2 to 2 inches high and located under the bottom chime at the drum seam (drum centerline). (See Figure 4, Section 3.)

7.3.5 Record the required data on the "Drum Venting Record", Form FMPC-OPR-3228 (See Figure 6).

7.3.6 Complete steps 7.1.14 thru 7.1.29.

7.4 Overpacking into Vented, Double Lidded Drums

7.4.1 Complete steps 7.1.1 thru 7.1.12.

7.4.2 Stencil "TOP" on one side of the overpack drum, near bolt rings and "BOTTOM" on the other side of drum near bolt rings.

7.4.3 Position drum with "TOP" end up (See Figure 4).

7.4.4 Remove the bolt ring, gasket, and lid from drum end marked "TOP".

7.4.5 Complete steps 7.3.2 thru 7.3.5.

7.4.6 Complete steps 7.2.4 thru 7.2.11.

7.4.7 Complete steps 7.1.16 thru 7.1.29.

8.0 APPLICABLE FORMS

R 8.1 FS-F-2987, "Container Overpack Information"

8.2 FMPC-CONT-367, "Permanent Inventory Record"

8.3 FMPC-OPR-3228, "Drum Venting Record"

R - MATERIAL REVISED, ADDED, OR DELETED.

R

CONTAINER OVERPACK INFORMATION

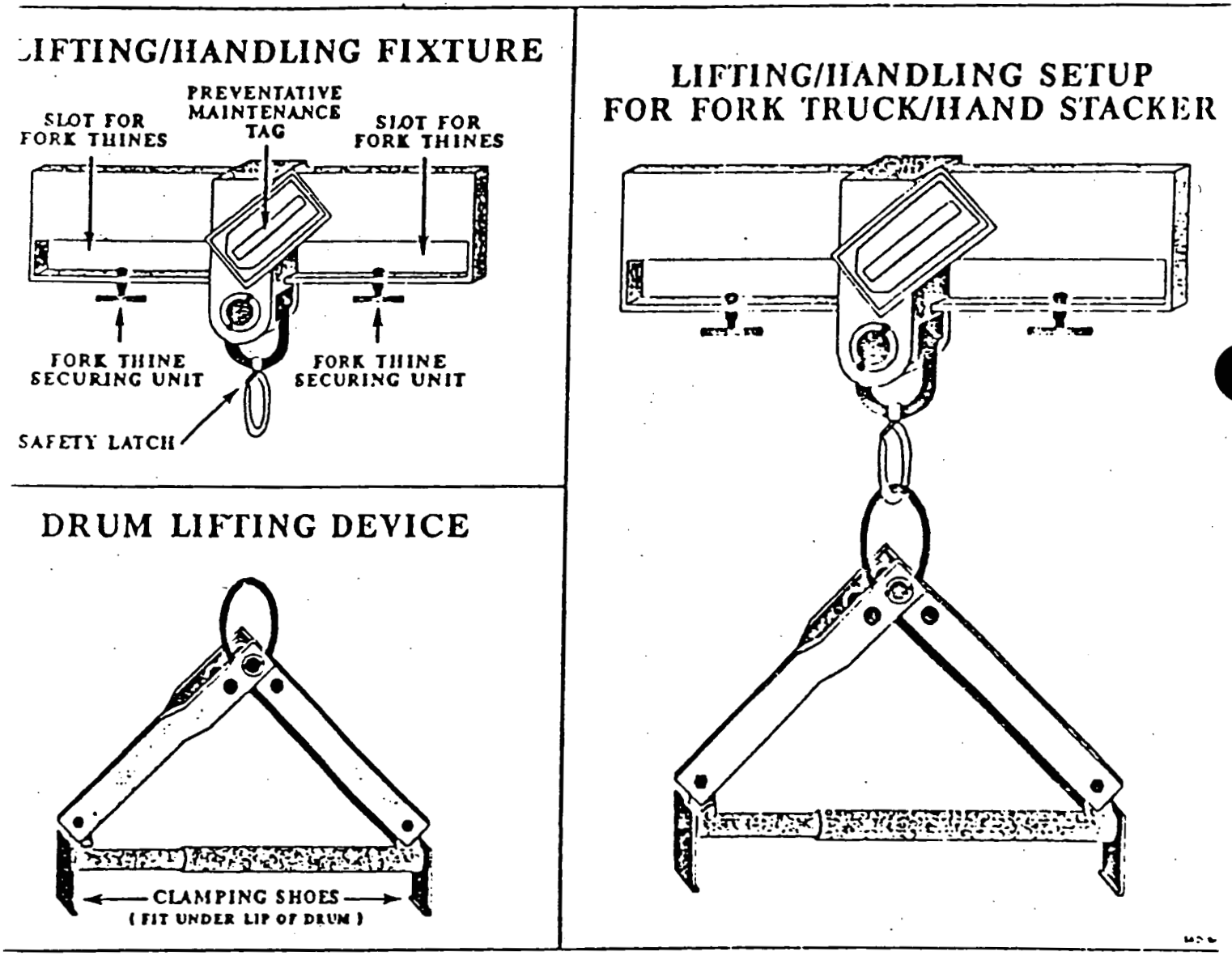
DATE _____ BADGE: _____

LOT NUMBER	DEFECTIVE CONTAINER WEIGHTS				OVERPACK WEIGHTS				ADDED INFORMATION				DRUM FROM			OVER-PACK SIZE IN GALLONS	[illegible] X = YES
	DRUM NO.	GROSS	TARE	NET	DRUM NO.	GROSS	TARE	NET	GAIN	LOSS	WET	DRY	AREA	ROW	STACK		
TOTALS																	

FS-F-2987 (REV 6-3-91)

CONTAINER OVERPACK INFORMATION
FORM FS-F-2987
Figure 1

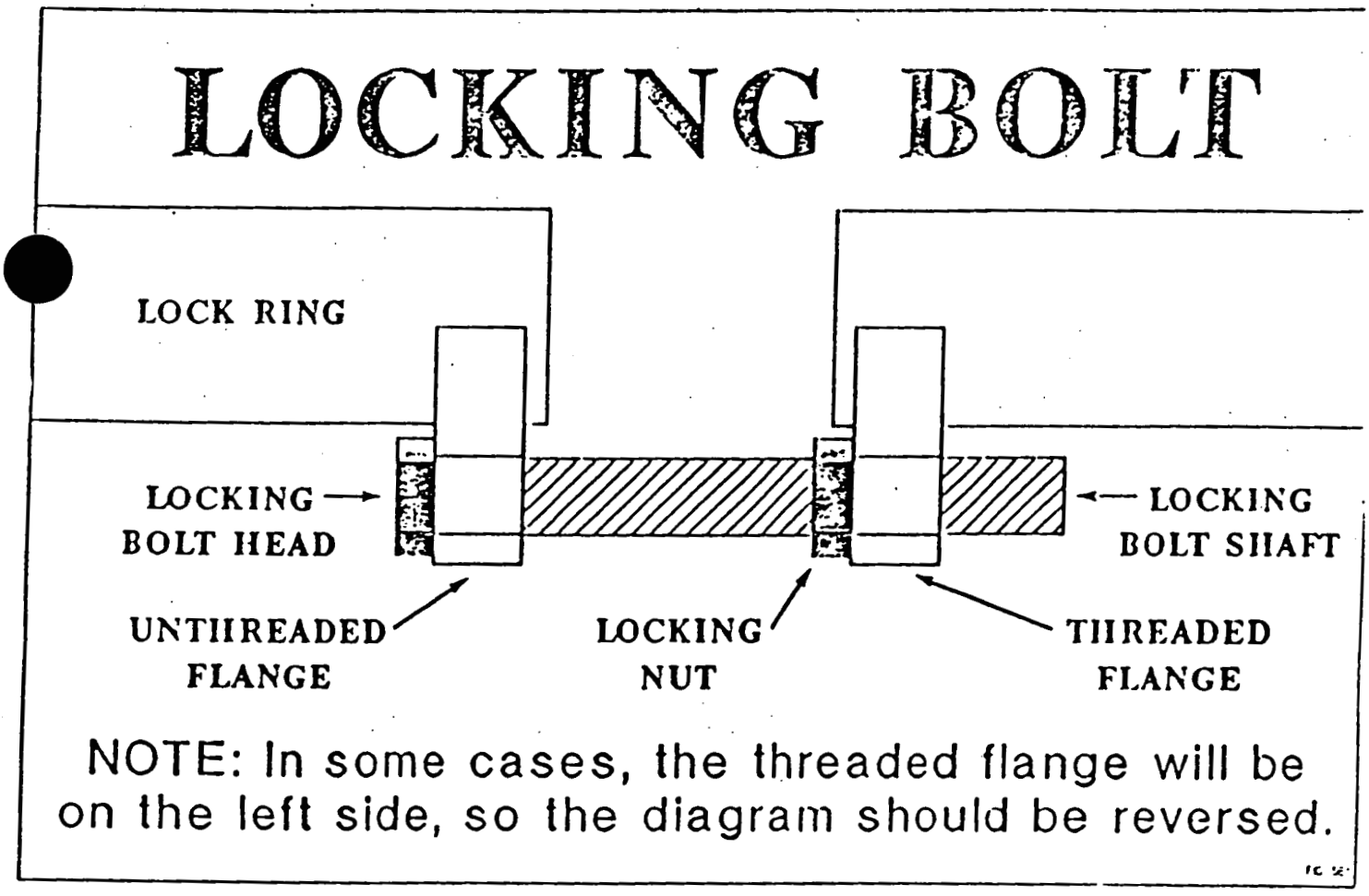
R - MATERIAL REVISED, ADDED, OR DELETED.



TYPICAL LIFTING/HANDLING EQUIPMENT
Figure 2

R - MATERIAL REVISED, ADDED, OR DELETED.

SITE SERVICES PROCEDURE	OVERPACKING DEFECTIVE CONTAINERS	SOP 20-C-600 AREA: As Applicable
Authorization: R. L. Gardner, Facilities and Warehousing	Supersedes: 1-C-804, 6-10-88	Issue Date: 03-06-91



INSTALLATION OF BOLT-TYPE LOCKING RING
Figure 3

R - MATERIAL REVISED, ADDED, OR DELETED.

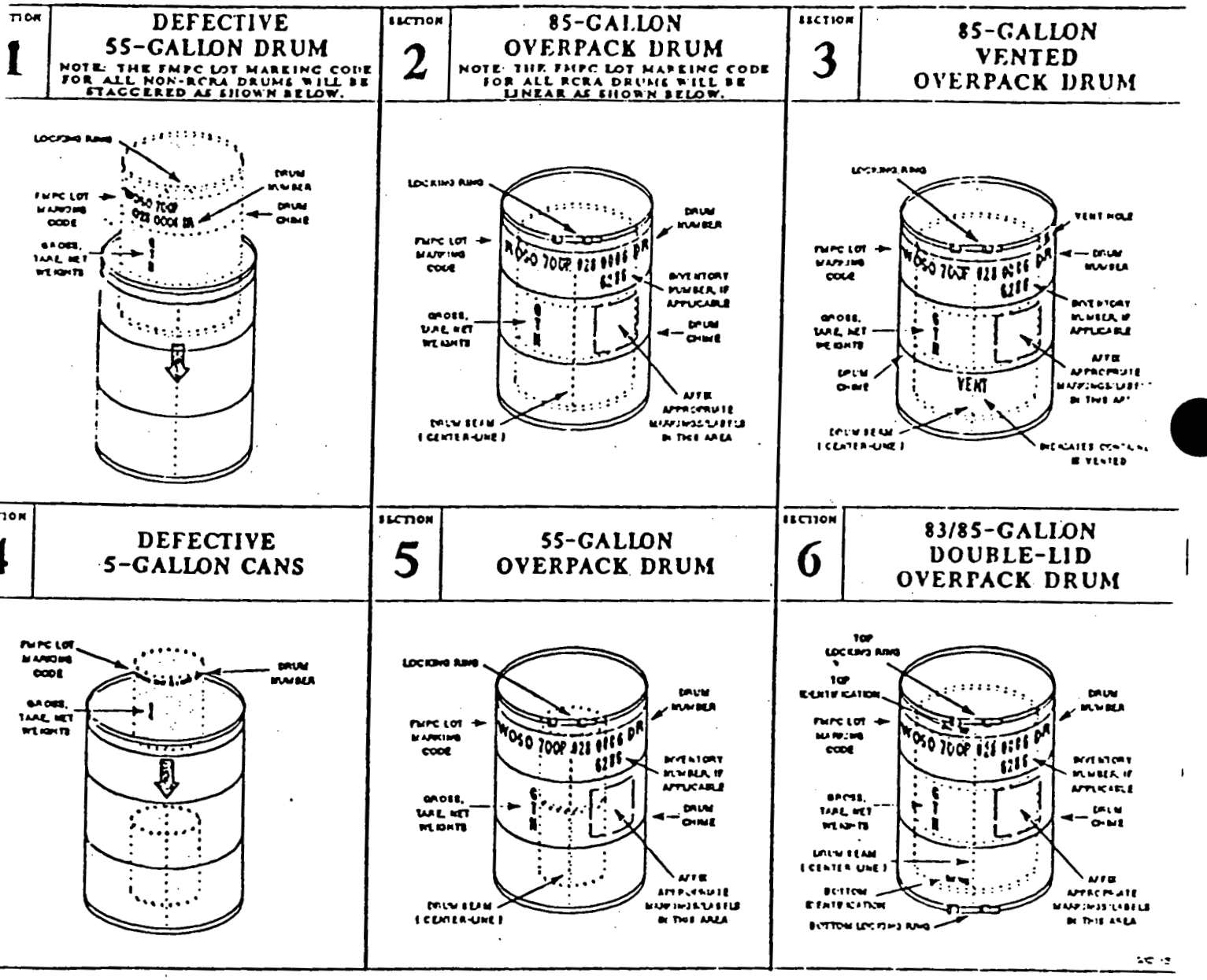


DIAGRAM OF OVERPACK/DEFECTIVE CONTAINER IDENTIFICATION
Figure 4

R - MATERIAL REVISED, ADDED, OR DELETED.

FMPC
CONTROLLER'S ORGANIZATION MATERIALS CONTROL AND ACCOUNTABILITY
PERMANENT INVENTORY RECORD

DATE	INVENTORY SHEET NUMBER
PLANT	AREA	NUCLEAR MATERIAL

LINE NO	BADGE NUMBER	INVENTORY NUMBER	LOT NUMBER: P O NUMBER	SOURCE	CLASS	MATERIAL	SEQUENCE	DRUM NO	GROSS WEIGHT POUNDS	TARE WEIGHT POUNDS	NET WEIGHT POUNDS	MBA	LOCATION: ROW	STACK	LEVEL	DRUM SIZE	YES: DP	PODS
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20																		

PERMANENT INVENTORY RECORD
FORM FMPC-CONT-367
Figure 5

R - MATERIAL REVISED, ADDED, OR DELETED.

FMPC
DRUM VENTING RECORD

Plant _____

DRUM NUMBER	LOT NUMBER	MTC. SRC	DAMAGED/ DEFORMED		DRUM VENTED		DATE	OPERATOR NAME AND BADGE NUMBER	OVERPACK	
			YES	NO	YES	NO			YES	NO

REMARKS: _____

FMPC OPR 3228 (7-91)

DRUM VENTING RECORD
FORM FMPC-OPR-3228
Figure 6

SITE SERVICES PROCEDURE	OVERPACKING DEFECTIVE CONTAINERS	SOP 20-C-600 AREA: As Applicable
Authorization: R. L. Gardner, Facilities and Warehousing	Supersedes: 1-C-804, 6-10-88	Issue Date: 03-06-91

RECORD OF ISSUE/REVISIONS

DATE	REV. NO	DESCRIPTION AND AUTHORITY
03-06-91	0	Requirement for a new procedure for overpacking defective containers per Request No. P91-058 initiated by J. W. Ogg.
09-11-91	1	Revised to replace Figure 1 with current form per Request No. P91-404, initiated by J. Ogg.

REQUIREMENTS MANUAL

RM-0005
Draft Date: 03-16-92

NON-CONTROLLED COPY

FEMP

LOT MARKING

AND

COLOR CODING SYSTEM

AUTHORIZED BY:_____ _____
H. F. DAUGHERTY, PRESIDENT DATE

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Westinghouse Environmental Management Company of Ohio
P. O. BOX 398704
CINCINNATI, OHIO 45239-8704

FEMP

LOT MARKING

AND

COLOR CODING SYSTEM

ISSUE DATE: 12-27-91
REVISION NO. 1

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT COMPANY OF OHIO
P. O. BOX 398704
CINCINNATI, OHIO 45239-8704

RECORD OF ISSUE/REVISIONS

DATE	REV. NO	DESCRIPTION AND AUTHORITY
08-23-91	0	Original issue of RM-0005 supersedes Internal Special FMPC-2178, Dated 7/1/89.
12-27-91	1	Incorporation of T91-004, T91-005, T91-006, and T91-031 per Request No. S92-034, S92-035, S92-036 and S92-037, initiated by D. Dunaway.

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LIST OF EFFECTIVE PAGES

CHAPTER	PAGE	REV. NO.	ISSUE DATE
	i	1	12-27-91
	ii	1	12-27-91
	iii	0	08-23-91
	iv	0	08-23-91
1	1.1 thru 1.5	0	08-23-91
1	1.6	1	12-27-91
1	1.7 thru 1.21	0	08-23-91
2	2.1 thru 2.3	0	08-23-91
3	3.1 thru 3.5	0	08-23-91
3	3.6	1	12-27-91
3	3.7 thru 3.20	0	08-23-91
4	4.1 thru 4.14	0	08-23-91
4	4.15 thru 4.17	1	12-27-91
4	4.18 thru 4.19	0	08-23-91
4	4.20	1	12-27-91

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TABLE OF CONTENTS

		Page No.
INTRODUCTION		ii
CHAPTER 1	Lot Marking System	1.01
CHAPTER 2	Color Coding System	2.01
CHAPTER 3	Material Description Codes	3.01
CHAPTER 4	Source or Origin Codes	4.01

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INTRODUCTION

The FEMP Lot Marking and Color Coding system has been in use at the FEMP for many years to provide a means for the control and accountability of nuclear materials which is required by the Department of Energy (DOE). Although the FEMP is no longer a production facility, there is still a large amount of nuclear material stored at the FEMP which requires the same degree of control and accountability. This same system used for the identification of nuclear materials is now being applied to hazardous waste, i.e., RCRA and TSCA waste and to low-level radioactive waste in WEMCO remediation activities. In this case, control and accountability is required to satisfy DOE and Environmental Protection Agency (EPA) concerns. WEMCO is in the process of identifying all packaged materials on-site according to the lot marking and color coding system. This procedure is intended to provide the necessary information in identifying any container of newly generated waste material as well as those in storage.

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CHAPTER 1 Lot Marking System

The FEMP lot mark will consist of five basic elements as follows:

	Element	Thorium	Enriched; Depleted; and Normal Uranium
1.0	Production Order Number	None	4 digits
2.0	Origin or Source Code	3 digits	3 digits
3.0	Class or Enrichment Code combined with	1 digit	1 digit
4.0	Material Description Code	3 digits	3 digits
5.0	Lot or Sequence Number	4 digits	4 digits
	Total Digits	11 digits	15 digits

Elements 1.0, 2.0, 3.0, and 5.0 are alpha-numeric (contain numbers or letters or both).

Element 4.0 is numbers only.

Elements 3.0 and 4.0 will be combined into a four-character material type code.

Elements 2.0, 3.0 and 5.0 will be separated from their predecessors by hyphens or dashes.

A detailed description of the composition of each element follows:

1.0 Production Order Number (P.O.)

This designation was assigned by the Production Scheduling Section to identify certain key production activities. It usually consisted of one letter followed by three digits, e.g., A500. In the lot marking system, it is always used in identification of enriched, depleted and normal materials. Waste packaged specifically for shipment to NTS may be marked with the PO Number N003.

CHAPTER 1 Lot Marking System (cont.)

When enriched uranium materials of irregular percent U^{235} content, for which no Production Order is applicable, are received or generated, special designations are assigned as outlined in the following paragraphs:

1.1 "S", followed by three digits indicating the shipper's percent U^{235} to two decimal places, is used to identify receipts of unusual U^{235} levels.

1.2 "S", followed by three digits, indicates the on-site producing plant's best estimate of the highest isotopic processed over a particular campaign. It is used to identify residue materials generated from the processing of materials of irregular U^{235} levels in FEMP operations. Materials containing up to 9.99 percent U^{235} will be coded as S plus the 3 digit isotopic value. Materials containing 10.00 to 19.99 percent U^{235} will be coded with only the isotopic value (4 digits).

1.3 "W", followed by three digits, indicates the on-site generating plant's best estimate of the highest isotopic associated with nonrecoverable contaminated waste material.

CHAPTER 1 Lot Marking System (cont.)

1.4 "X", followed by three digits, as indicated in the summary below, designating a range of percent U^{235}, will be used to identify certain residues produced from the mixing of materials of regular production but differing U^{235} levels (all numbers are inclusive):

1.4.1 X948 for 0.148 to 0.193 & 0.207 to 0.709

1.4.2 X110, X111, X118 & X119 for 0.710 to 0.712

1.4.3 X008 for 0.713 to 0.756

1.4.4 X884 for 0.757 to 0.853

1.4.5 X500 for 0.867 to 0.940

1.4.6 X888 for 0.954 to 1.243

1.4.7 X767 for 1.257 to 1.593

1.4.8 X911 for 1.607 to 2.093

1.5 "P", followed by three digits, indicates the on-site producing plant's estimate of the highest isotopic associated with uranium products or residues containing trace quantities of plutonium requiring special handling.

1.6 "R", followed by three digits, indicate the on-site producing plant's estimate of the highest isotopic associated with uranium products or residues containing RCRA mixed hazardous materials requiring special handling.

2.0 Origin or Source Code

This is a three-digit code with a block of 100 numbers assigned to each plant, as indicated in the following table. The plants are divided into sub-areas with subordinate blocks of numbers assigned to each.

FEMP Origin or Source Code

000-099	Reserved for future needs	500-599	Plant 5
		600-699	Plant 6
100-199	Plant 1	700-799	Miscellaneous facilities
200-299	Plants 2 & 3		
300-399	Pilot Plant	800-899	Plant 8
400-499	Plant 4	900-999	Plant 9

CHAPTER 1 Lot Marking System (cont.)

2.1 For example, Plant 5 is assigned 500-599 and the Reduction Area in Plant 5 is assigned 510 to 529. Within the area, each operation or piece of equipment which may generate a material for coding is assigned a source number. In the Plant 5 Metal Reduction Area, the Rockwell furnaces are assigned 516 and the breakout area dust collectors 520. The intention is to provide a flexible system which can be used to identify a particular item of equipment as a source, if this is desirable, or to allow coding by general area or by plant if this is all that is required.

2.2 A complete list describing all FEMP Source or Origin codes currently assigned will be found in Chapter 4.

2.3 Off-site origin codes used in processing receipts from other nuclear facilities are alphabetically designated using the three-letter Reporting Identification Symbol (RIS) of the shipper. See discussion on special handling of external receipts on page 1.11.

3.0 Class or Enrichment Code

This code consists of one digit or letter designating the general class or enrichment into which the material falls. Those categories currently most important in our operations have been assigned a number or letter as indicated.

CHAPTER 1 Lot Marking System (cont.)

Class or Enrichment Codes - Alphabetic

Code	Category	Detail	$\%U^{235}$	Additive or Alloy Level
A	Normal	Alloy		Alloy
B	Enriched	Alloy	Various	Alloy
C	Enriched		2.10	Other[1]
D	Depleted			Standard
E				
F				
G	Normal			Alloy 601
H	Enriched		0.947	Alloy 601
J				
K				
L	Enriched		0.947	Other[1]
M	Enriched		1.25	Alloy 601
N	Normal	Waste	0.710 to 0.712	None
P	Depleted	Waste	<0.710	None
Q				
R				
T	Thorium			None
U				
V	Enriched	Waste	>0.712	None
W				
X	Enriched		Other[1]	Other[1]
Y				
Z				

NOTE: Letters I, O, and S will not be used.

[1] Not specified. Refer to P.O. for U^{235} or additive level.

CHAPTER 1 Lot Marking System (cont.)

R

Class or Enrichment Codes - Numeric

Code	Category	Detail	$\%U^{235}$	Additive or Alloy Level
1	Normal		0.710 to 0.712	Std
2	Enriched	Recycle Tails	Various	None
3	Enriched		1.10	Std
4	Enriched		1.25	Std
5	Enriched		0.947	Std
6				
7	Enriched	Sweetener	Various	None
8	Enriched		0.86	Std
9	Enriched		2.10	Alloy 601
0	Enriched		Other[1]	Std

[1] Not specified. Refer to P.O. for U^{235} or additive level.

The use of this code in combination with the Material Description Code makes it possible to assign the same material description code to similar materials regardless of their class, enrichment or special nature.

For ready reference, a table of class codes arranged by material categories, $\%U^{235}$ and additive or alloy levels is also included below.

CHAPTER 1 Lot Marking System (cont.)

Class Codes by Material Categories

Category	Detail	$\%U^{235}$	Additive or Alloy Level				
			None	Std	601[2]	Other[2,3]	Alloy[4]
Depleted				D			
Depleted	Waste	<0.710	P				
Normal	Waste	0.710 to 0.712	N				
Enriched	Waste	>0.712	V				
Enriched		0.86		8			
Enriched		0.947		5	H	L	
Enriched		1.10		3			
Enriched		1.250		4	M		
Enriched		2.10			9	C	
Enriched	Alloy	Other[1]		0		X	B
Enriched	Recycle Tails	Various	2				
Enriched	Sweetener	Various	7				
Thorium			T				

[1] Not specified. Refer to P.O. for U^{235} or additive level.

[2] Properly applied to only material which has actually achieved this additive level; not appropriate for UO_3, UF_4, or derbies.

[3] Any additive level other than "Standard" or Alloy 601; refer to P.O. or I.P.O. (Interplant Production Order) for details.

[4] Materials, ordinarily from off-site, containing a concentration of alloying materials usually far above additive (ppm) levels.

CHAPTER 1 Lot Marking System (cont.)

4.0 Material Description Code

This is a three digit code, subdivided into residue and product categories as follows:

Low Grade Residues	000-099
High Grade Residues	100-149
Refinery Feeds	150-199
Intermediate Products	200-299
Remelt Feeds	300-399
Casting Products	400-449
Rolling and Extrusion Products	450-499
Machining Products	500-599

The intent in setting up the material descriptions was to make them general whenever possible, with the Class and Source Codes aiding in the specific identification of the material.

A complete list of all Material Description Codes currently assigned will be found in Chapter 3.

The one-digit or letter Class or Enrichment Code and the three-digit Material Description Code are combined into a four-character Material Type Code which is the basic unit of the FEMP Lot Marking system.

4.1 The low grade residue category (000-099) is intended to include all low uranium or thorium content residues and some higher grade uranium or thorium content residues which require extensive handling and processing before use as oxidation or refinery feed. In general, the low grade residues have been arranged in order of increasing quality. In other words, the lowest uranium or thorium content and lowest quality materials are designated by lower numbers and the high quality materials by higher numbers.

4.2 High grade residues (100-149) are, in general, high uranium or thorium content residues which require some processing such as screening or oxidation. They correspond in many cases to the feed for Plant 8.

4.3 Refinery feeds (150-199) are materials which were suitable for introduction into the refinery without further processing.

CHAPTER 1 Lot Marking System (cont.)

4.4 The intermediate product category (200-299) includes products from the various processes involved in converting refinery feed to metal. It also includes recycle metal which requires some pretreatment such as sawing or pickling before remelting.

4.5 Remelt feeds (300-399) are materials ready for remelt without further treatment.

4.6 Casting products (400-449), rolling and extrusion products (450-499), and machining products (500-510) are the products from these operations.

5.0 Lot or Sequence Number

This is a four-digit number which is used to identify consecutive lots of specific material in sequence where more than one lot is produced per month. Where not more than one lot is produced per month, the lot sequence number indicates the consecutive month of production starting with January 1962 as lot 0001. October 1991 is lot 0358.

To identify the category of trash, the lot or sequence number should include the product month number (May 1989 = 329), preceded by a numeric code that represents the category of 003 material. These categories are:

1 - Glass
2 - Rubber Hose
3 - Plastic
4 - Metal
5 - Concrete, Ceramics, Soil
6 - Contaminated Burnables
7 - Oily Rags, Air Filters and Gaskets
8 - Floor Sweepings
9 - Other - Stencil type of trash on containers

CHAPTER 1 Lot Marking System (cont.)

6.0 Additional Information

6.1 Examples of Lot Marking

The preceding sections of this discussion have been generalized to explain the intent of the system. The following examples are offered to illustrate the application of the general system structure in developing lot markings to identify specific material produced at the FEMP. Marking of material received from off-site is discussed in subsequent paragraphs.

Example 1 (Normal) H110 - 263 - 1200 - 0418

H110	Applicable to P.O. H110
263	Produced in Plant 2/3 (Refinery), Denitration System North Side Packaging
1	"Normal" Uranium
200	UO_3, Product
0418	Lot Sequence Number

Example 2 (Enriched) A500 - 965 - 5069 - 0541

A500	Applicable to P.O. A500
965	Produced in Plant 9, Sump Liquor Processing Area
5	0.947% U^{235} Enriched Uranium
069	Wet Sump Cake, Non-Oily, Non-Halide
0541	Lot Sequence Number

Example 3 (Thorium) 380 - T069 - 0126

380	Produced in Pilot Plant Sump Area
T	Thorium
069	Wet Sump Cake, Non-Oily, Non-Halide
0126	Lot Sequence (Indicates June 1972)

Example 4 (Depleted) A948 - 951 - D110 - 0329

A948	Applicable to P.O. A948
951	Produced in Plant 9, LeBlond Rapid Borer
D	Depleted Uranium
110	Non-briquettable Chips and Turnings for Oxidation
0329	Lot Sequence (Indicates May 1989)

CHAPTER 1 Lot Marking System (cont.)

Example 5 (Depleted) W020 - 501 - P003 - 6329

W020	Applicable to Waste (0.20% U^{235})
501	Plant 5 Maintenance
P003	Depleted Non-recoverable Trash - for storage or shipment for off-site burial
6	Contaminated Burnables
329	May 1989

6.2 Lot Marking of External Receipts

Lot marking of material received from off-site by WEMCO will conform in general to the format described in previous sections. There are, however, certain exceptions which should be noted:

6.2.1. The Source Code will be the three-letter Reporting Identification Symbol (RIS) as illustrated in the table below.

6.2.2. The Lot Sequence Number will be the DOE Form 741 number assigned by the shipper in all cases except:

FTA Extrusions - Use 0000

Example 6 (Depleted Receipt) H082 - FTA - D455 - 0000

H082	Applicable to P.O. H082
FTA	RMI Company, Inc. (Shipper)
D	Depleted Uranium
455	Mark 31 Extruded Tubes - Inner
0000	Indeterminate Lot Sequence Number

6.3 External Source or Origin Codes

The table below shows the external source or origin codes that have been used for lot marking material received from off-site.

CHAPTER 1 Lot Marking System (cont.)

SOURCE OR ORIGIN CODES FOR OFF-SITE RESIDUES AND SCRAP AT THE FEMP

SOURCE CODE	NAME OF SHIPPER	PLANT	ADDRESS
AIC	Atomics International	NA Aviation	Canoga park, California
AGT	General Electric Company	ANP Project	Cincinnati, Ohio
ALA	Sandia Corp.	Sandia Lab.	Albuquerque, New Mexico
ALD	Sandia Corp.	Sandia	Livermore, California
ALO	Dow Chemical	Rocky Flats	Golden, Colorado
ARF	Rockwell International	Rocky Flats	Golden, Colorado
ARM	IIT Research Inst.		Chicago, Illinois
ASA	Dow Chemical Company	Rocky Flats	Golden, Colorado
ATA	Mason & Hanger	Silas Mason	Burlington, Iowa
AUA	Los Alamos Nat. Lab.		Los Alamos, New Mexico
AVA	Monsanto	Mound	Miamisburg, Ohio
AVB	EG&G	Mound	Miamisburg, Ohio
AWA	Mason & Hanger	Pantex	Amarillo, Texas
AXA	General Electric Company	Neutron	St. Petersburg, Florida
AYA	Mason & Hanger		San Antonio, Texas
AZA	Mason & Hanger		Fort Campbell, Kentucky
BBA	Bridgeport Brass Company	Extrusion Plant	Ashtabula, Ohio
BMI	Battelle Memorial Inst.		Columbus, Ohio
BWD	Martin Marietta	Gaseous Diff.	Oak Ridge, Tennessee
BXA	Martin Marietta	Gaseous Diff.	Portsmouth, Ohio
BYC	Martin Marietta	Gaseous Diff.	Paducah, Kentucky
BZA	Brookhaven Laboratory		Upton, New York
CAA	USAEC	Chicago Office	Chicago, Illinois

CHAPTER 1 Lot Marking System (cont.)

SOURCE OR ORIGIN CODES FOR OFF-SITE RESIDUES AND SCRAP AT THE FEMP (cont.)

SOURCE CODE	NAME OF SHIPPER	PLANT	ADDRESS
CAE	Atomics International	NA Aviation	Canoga Park, California
CAF	Battelle Memorial Inst.		Columbus, Ohio
CAK	Ames Laboratory	Iowa State U.	Ames, Iowa
CBH	New Brunswick Laboratory	NBL	New Brunswick, New Jersey
CBJ	New Brunswick Laboratory		Argonne, Illinois
CCP	MIT		Cambridge, Mass.
CCS	Babcock and Wilcox Company	Research Cen.	Lynchburg, Virginia
CDY	Whittaker Corporation	Nuclear Metals	West Concord, Mass.
CGE	General Electric Company	ANP Project	Cincinnati, Ohio
CKY	Union Carbide	Gaseous Diff.	Paducah, Kentucky
CWA	Fermi Laboratory		Batavia, Illinois
CYT	Union Carbide	Y-12 Plant	Oak Ridge, Tennessee
CZA	Argonne National Laboratory		Argonne, Illinois
CZC	Argonne National Laboratory		Argonne, Illinois
DCC	Nuclear Fuel Services, Inc.	Davidson Chem.	Erwin, Tennessee
DYA	Sylcor Division	Sylvania EPI	Hicksville, L.I., New York
DZA	Westinghouse Savannah River Co.	Savannah River	Aiken, South Carolina
FAA	Oak Ridge Operations	USDOE	Oak Ridge, Tennessee
FAK	Middlesex Storage Plant	USAEC	New Brunswick, New Jersey
FAL	University of Virginia		Charlottesville, Virginia
FAQ	National Lead	Albany	Albany, New York
FAV	Kerr-McGee Nuclear Products		Cushing, Oklahoma
FAX	Nuclear Fuel Services, Inc.	Davidson Chem.	Erwin, Tennessee

CHAPTER 1 Lot Marking System (cont.)

SOURCE OR ORIGIN CODES FOR OFF-SITE RESIDUES AND SCRAP AT THE FEMP (cont.)

SOURCE CODE	NAME OF SHIPPER	PLANT	ADDRESS
FBA	General Electric Company	Energy Systems	Evendale, Ohio
FBB	General Electric Company	NMPO	Idaho Falls, Idaho
FBE	New Brunswick Laboratory	USAEC	New Brunswick, New Jersey
FBX	Vitro Chemical Company		Chattanooga, Tennessee
FCZ	Tenessee Nuclear Spec.		Jonesboro, Tennessee
FTA	Reactive Metals Inc.	Extrusion Plant	Ashtabula, Ohio
FUA	Reactive Metals Inc.	Extrusion Plant	Ashtabula, Ohio
FVA	National Lead of Ohio	FEMP	Cincinnati, Ohio
FVB	General Atomic	Storage Fac.	Youngsville, North Carolina
FVC	WEMCO	FEMP	Cincinnati, Ohio
FWA	Mallinckrodt Chemical Works		Weldon Spring, Missouri
FXA	Goodyear Atomic	Gaseous Diff.	Portsmouth, Ohio
FYA	Union Carbide	Gaseous Diff.	Paducah, Kentucky
FYC	Martin Marietta	Gaseous Diff.	Paducah, Kentucky
FZA	Union Carbide	Gaseous Diff.	Oak Ridge, Tennessee
FZB	Union Carbide	Y-12 Plant	Oak Ridge, Tennessee
FZC	Union Carbide	ORNL	Oak Ridge, Tennessee
FZE	Martin Marrietta	Gaseous Diff.	Oak Ridge, Tennessee
FZF	Martin Marrietta	Y-12 Plant	Oak Ridge, Tennessee
FZG	Martin Marrietta	ORNL	Oak Ridge, Tennessee
GAT	Goodyear Atomic	Gaseous Diff.	Portsmouth, Ohio
GDA	General Dynamics	General Atomic	San Diego, California
HGE	General Electric Company	Hanford	Richland, Washington

CHAPTER 1 Lot Marking System (cont.)

SOURCE OR ORIGIN CODES FOR OFF-SITE RESIDUES AND SCRAP AT THE FEMP (cont.)

SOURCE CODE	NAME OF SHIPPER	PLANT	ADDRESS
HRA	Rockwell Int.	Hanford	Richland, Washington
HUA	Westinghouse Hanford Co., HEDL	Hanford	Richland, Washington
HUD	Westinghouse Hanford Co., CPD	Hanford	Richland, Washington
HUE	Westinghouse Hanford Co., DRD	Hanford	Richland, Washington
HVA	Atlantic Richfield	Hanford	Richland, Washington
HWA	Isochem, Inc	Hanford	Richland, Washington
HXA	United Nuclear Corp. Inc.	Hanford	Richland, Washington
HYA	Battelle Memorial Inst., PNL	Hanford	Richland, Washington
HZA	General Electric Company	Hanford	Richland, Washington
JSA	Allied Chemical	Aerojet	Idaho Falls, Idaho
JSB	Aerojet Nuclear	Idaho Falls	Idaho Falls, Idaho
JSG	EG&G Idaho	Idaho Falls	Idaho Falls, Idaho
JWB	Idaho Nuclear Corp.	Idaho Falls	Idaho Falls, Idaho
JXI	Westinghouse Idaho Nuclear Co.	Idaho Falls	Idaho Falls, Idaho
KMG	Kerr-McGee Nuclear Products		
KZA	Knolls Atomic Power Laboratory		Schnectady, New York
LAB	University of California	Lawrence Lab.	Livermore, California
LAE	Atomics International		Canoga Park, California
LAL	Rockwell International		Canoga Park, California
LAQ	Bureau of Mines		Albany, Oregon
LAW	(Gulf) General Atomic		San Diego, California
LAZ	General Electric Company	Nuclear Energy	San Jose, California
LLB	Sandia Corp.	Livermore	Livermore, California

CHAPTER 1 Lot Marking System (cont.)

SOURCE OR ORIGIN CODES FOR OFF-SITE RESIDUES AND SCRAP AT THE FEMP (cont.)

SOURCE CODE	NAME OF SHIPPER	PLANT	ADDRESS
LZA	University of California	Berkeley	Berkeley, California
LZB	University of California	Livermore	Livermore, California
MAA	Worchester Polytechnic	USAEC	New York, New York
MAD	Pratt & Whitney Aircraft Div.	CANEL	Middletown, Connecticut
MAP	Aeroprojects, Inc.		West Chester, Pennsylvania
MAY	Nat. Bureau of Standards		Washington, D. C.
MBB	Reactive Metals Inc.	Extrusion Plant	Ashtabula, Ohio
MBL	Martin Marietta	Nuclear Div.	Baltimore, Maryland
MBM	MIT		Cambridge, Mass.
MBN	Nuclear Metals Inc.	Textron	West Concord, Mass.
MBP	U. of Rochester		Rochester, New York
MBR	Babcock and Wilcox Company	R&D Div.	Lynchburg, Virginia
MBT	Babcock and Wilcox Company	R&D Div.	Lynchburg, Virginia
MBU	United Nuclear Corp.	Development	White Plains, New York
MBW	Babcock and Wilcox Company		Lynchburg, Virginia
MBY	Vitro Laboratories		West Orange, New Jersey
MCW	Mallinckrodt Chemical Works	Uranium Div.	Weldon Spring, Missouri
MCY	Westinghouse Electric Co.	NES	Pittsburgh, Pennsylvania
MIO	Nuclear Metals Inc.		West Concord, Mass.
MPW	Pratt & Whitney Aircraft Div.	CANEL	Middletown, Connecticut
MSA	USAEC, NY Operations		New York, New York
NBL	New Brunswick Laboratory	USAEC	New Brunswick, New Jersey
NBX	Middlesex Storage Plant	USAEC	New Brunswick, New Jersey

CHAPTER 1 Lot Marking System (cont.)

SOURCE OR ORIGIN CODES FOR OFF-SITE RESIDUES AND SCRAP AT THE FEMP (cont.)

SOURCE CODE	NAME OF SHIPPER	PLANT	ADDRESS
NCF	National Carbon Co.	Union Carbide	Fostoria, Ohio
NLA	National Lead	Albany	Albany, New York
NMC	Martin Marietta	Nuclear Div.	Middle River, Maryland
NME	Nuclear Mat. & Equip. Corp.	NUMEC	Apollo, Pensylvania
OGE	General Electric Company	NM Propulsion	Cincinnati, Ohio
ORF	EG&G	Rocky Flats	Golden, Colorado
PAB	Duquense Light Co.	Shippingport	Shippingport, Pennsylvania
PAP	Babcock and Wilcox Company		Apollo, Pensylvania
PZA	Westinghouse Electric Co.	Bettis APL	West Mifflin, Pennsylvania
QAA	USAEC	Headquarters	Washingtion, D. C.
SAF	Mason & Hanger	Silas Mason	Fort Campbell, Kentucky
SBN	Mason & Hanger	Silas Mason	San Antonio, Texas
SBX	Monsanto	Mound	Miamisburg, Ohio
SRS	Sylcor Division	Sylvania EPI	Hicksville, L.I., New York
RBR	Brazil		
TOA	K-65, Q-11		
VAC	National Research		Cambridge, Mass.
VCC	Vitro Chemical Company		Chattanooga, Tennessee
VXB	UNC Industries (Waste)	Hanford	Richland, Washington
WCP	Combustion Engineering, Inc.	Naval Reactors	Windsor, Connecticut
WEB	Westinghouse Power Div.	Bettis APL	Pittsburg, Pennsylvania
XHP	General Atomic	Storage Fac.	Youngsville, North Carolina
YAK	Department of the Navy	NFEC	Alexandria, Virginia

CHAPTER 1 Lot Marking System (cont.)

SOURCE OR ORIGIN CODES FOR OFF-SITE RESIDUES AND SCRAP AT THE FEMP (cont.)

SOURCE CODE	NAME OF SHIPPER	PLANT	ADDRESS
YAM	Coast Guard Academy		New London, Connecticut
YAQ	National Electric Coil		Louisville, Kentucky
YDE	Nuclear Fuel Services	West Valley	West Valley, New York
YEC	Kerr-McGee	Cimarron	Crecent, Oklahoma
YEF	Smithsonian Inst.	Hist. & Tech.	Washingtion, D. C.
YJL	Colgate University		Hamilton, New York
YLE	Westinghouse	Waltz Mill	Madison, Pennsylvania
YPF	U. of Alabama at Auburn		Auburn, Alabama
YQK	GSA Stockpile		Washingtion, D. C.
YST	TNS		Jonesboro, Tennessee
YQM	Frankfork Arsenal	DOD	Philadelphia, Pennsylvania
YUD	Exxon Nuclear	Hanford	Richland, Washington
YVX	Nuclear Metals		Concord, Mass.
ZCM	Bucknell University		Lewisburg, Pennsylvania
ZCY	Carnegie-Mellon U.		Pittsburgh, Pennsylvania
ZDB	Case Western Reserve U.		Cleveland, Ohio
ZDC	Catholic University		Washingtion, D. C.
ZFZ	Fairleigh Dickenson U.		Teaneck, New Jersey
ZDP	University of Cincinnati		Cincinnati, Ohio
ZDS	Clarke College		Dubuque, Iowa
ZDT	Clarkson University		Potsdam, New York
ZEF	Combustion Engineering		Windsor, Connecticut
ZIB	Scientific Ecology		Oak Ridge, Tennessee

CHAPTER 1 Lot Marking System (cont.)

SOURCE OR ORIGIN CODES FOR OFF-SITE RESIDUES AND SCRAP AT THE FEMP (cont.)

SOURCE CODE	NAME OF SHIPPER	PLANT	ADDRESS
ZKB	Iowa State University		Ames, Iowa
ZKL	Kansas State U.		Manhattan, Kansas
ZLD	Ledoux & Co.		Teaneck, New Jersey
ZLR	Louisiana Tech. U.		Ruston, Louisiana
ZLU	University of Louisville		Louisville, Kentucky
ZMH	Manhattan College		Riverdale, Bronx, New York
ZMK	Marquette University		Milwaukee, Wisconsin
ZMR	University of Maryland		College Park, Maryland
ZND	University of Minnesota		Minneapolis, Minnesota
ZNE	3M Company		St. Paul, Minnesota
ZNG	University of Mississippi		University, Mississippi
ZNX	National Lead	Albany	Albany, New York
ZOV	Manufacturing Sciences		
ZPG	University of Nevada		Reno, Nevada
ZQC	Northeastern University		Boston, Mass.
ZQG	Northwestern University		Chicago, Illinois
ZQM	Nuclear Fuel Services, Inc.		Erwin, Tennessee
ZQN	Nuclear Mat. & Equip. Corp.	NUMEC	Apollo, Pensylvania
ZQX	Ohio University		Athens, Ohio
ZSF	Pittsburgh University		Pittsburgh, Pennsylvania
ZSK	Princeton University		Princeton, New Jersey
ZST	Chamberlain Mfg.		Waterloo, Iowa
ZVF	Syracuse University		Syracuse, New York

CHAPTER 1 Lot Marking System (cont.)

SOURCE OR ORIGIN CODES FOR OFF-SITE RESIDUES AND SCRAP AT THE FEMP (cont.)

SOURCE CODE	NAME OF SHIPPER	PLANT	ADDRESS
ZVX	Texas Tech. University		Lubbock, Texas
ZWB	Toledo University		Toledo, Ohio
ZWY	Utah State University		Logan, Utah
ZXA	Vanderbilt University		Nashville, Tennessee
ZXC	U. of Virginia		Charlottesville, Virginia
ZXF	Villanova University		Villanova, Pennsylvania
ZXH	Virginia Polytechnic Inst.		Blacksburg, Virginia
ZXZ	Washington University		St. Louis, Missouri
ZYG	West Virginia Inst. of Tech.		Montgomery, West Virginia
ZYP	Westinghouse	Atomic Power	Cheswick, Pennsylvania
ZZA	University of Wisconsin		Madison, Wisconsin
ZZM	Yale University		New Haven, Connecticut

CHAPTER 1 Lot Marking System (cont.)

7.0 SOLVENT AND ORGANIC CHEMICALS NAMES TO BE STENCILED ON CONTAINERS

Acetone
Acetonitrile
Agitene
Benzene
n-Butyl alcohol
Carbon disulfide
Carbon tetrachloride
Chlorinated fluorocarbons
P Chlorobenzene
P Chlorodane
Chloroform
m-Cresol
o-Cresol
p-Cresol
Cresols
Cresylic Acid
(Cresols plus phenols)
Cyclohexane
Cyclohexanone
P 2, 4-D
P o-Dichlorobenzene
P 1, 4-Dichlorobenzene
1, 2-Dichloroethane
1, 1-Dichloroethylene
2, 4-Dinitrotoluene
1, 4-dioxane
P Endrin
2-Ethoxyethanol
Ethyl acetate
Ethyl benzene
1, 1, 2-Trichloro-1, 2, 2-trifluoroethane
Ethyl ether
P Heptachlor (and its hydroxide)
P Hexachlorobenzene
Hexachlorobutadiene
Hexachloroethane
Isobutanol
P Lindane
Methanol
P Methoxychlor
Methyl ethyl ketone (2-Butanone)
Methyl isobutyl ketone
Methylene chloride
Nitrobenzene
2-Nitropropane
P Pentachlorophenol
Phenol
Pyridine
Tetrachloroethylene
Toluene
P Toxaphene
P 2, 4, 5-TP acid Silvex
1, 1, 1-Trichloroethane
1, 1, 2-trichloroethane
Trichloroethylene
Trichlorofluoromethane
P 2, 4, 5-Trichlorophenol
P 2, 4, 6-Trichlorophenol
Vinyl chloride
Xylene

P = Pesticide

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CHAPTER 2 Color Coding System

In addition to the lot marking system described for identifying nuclear materials, color coding is applied as a secondary method of designating depleted, normal, and enriched uranium and thorium.

Three basic colors, black, red and white, are used for painting the body of containers in service at the FEMP.

Black drums are used for depleted uranium, normal uranium, unrestricted (for Nuclear Safety) enriched uranium compounds and residues, RCRA and TSCA waste and thorium.

All-red drums are used for enriched, restricted uranium (e.g., mass, geometry, or concentration).

White drums and white metal boxes are used for off-site shipment of low-level uranium waste; white drums are used for thorium waste.

Container identification markings required for long-term storage such as lot marks, weights, drum numbers, alloying chemical symbols and percent U^{235} are routinely applied by stencil over the basic paint colors as specified in Table I. "Markal" or equivalent type white or black paint sticks are used for applying temporary identification markings to residue and waste containers and to other specific materials in the production areas, including some off-site receipts and the reidentification of materials on the storage pad. Pre-printed identification labels that contain barcodes may also be used.

Color coding of black drums will be further implemented by application of a narrow stripe around the circumference above the gross, tare and net weight information on each container. The colors to be used for this stripe are as follows:

CHAPTER 2 Color Coding System (cont.)

Material in Black Drums	% U^{235}	Stripe Color
(a) Depleted Uranium	<0.710	Green
(b) Normal Uranium	0.710 to 0.712	Yellow
(c) Enriched Uranium - Unrestricted compounds and residues	>0.712	Red
(d) Thorium		Blue
(e) RCRA and TSCA waste		None

An exception to the container body painting and stencilling requirement is permitted for enriched oxides packaged in 6" diameter by 15" high metal cans. A narrow red-tape stripe around the periphery of the can and a printed label are applied.

It will not be necessary to apply a stripe to all drums.

Containers characterized and identified as containing RCRA and TSCA waste and which have been declared to be below the economic discard limit will have their color stripe obliterated with black paint before they are placed in storage in the RCRA warehouses.
NOTE: Drums with color stripes which are already in storage need not be changed.

Red targets or red-white cards, or yellow-white or green-white cards and pressure-sensitive tape are used to color code enriched, normal and depleted uranium metal on skids, hoppers, dollies, metal pieces not in containers, or boxes and major components of process equipment such as vessels, sumps, machinery, dust collectors, etc. An explanation of their use is detailed in procedures 20-C-101 (latest version), "SOP-Moving and Storing Nuclear Materials On-Site at the FMPC," 20-C-102, "SOP-For Receiving, Storing, Repackaging and Moving Enriched Uranium Materials $\leq$20.% U^{235} From Off-Site," and 20-C-904, "SOP-Nuclear Safety General Requirements."

Old identification markings will be obliterated with paint immediately upon emptying containers.

Off-site receipts which do not comply with FEMP color coding requirements are color coded with a band of paint around the periphery of the container - yellow for normal, red for enriched, green for depleted, and blue for thorium, as a substitute for painting the entire container. The proper color coding is applied as soon as the analytical results are received from the Laboratory.

CHAPTER 2 Color Coding System (cont.)

TABLE I

FEMP Color Code Specification
for Basic Container Paints and
Identification Markings

Type of Material	Basic Container Paint Color	Identification Markings Paint Color	Stripe Paint Color
Normal uranium	Black	White	Yellow
Enriched uranium, unrestricted	Black	White	Red
Enriched uranium mass, geometry or concentration restricted	Red	White	None
Depleted uranium	Black	White	Green
Thorium	Black	White	Blue
Thorium Waste	White	Black	Blue
Uranium Waste Shipments	White	Black	None
RCRA and TSCA Waste	Black	White	None

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CHAPTER 3 MATERIAL DESCRIPTION CODES

LOW-GRADE RESIDUES

001 DISCARD PROCESS RESIDUES, TRAILER CAKES, WASTE SLURRIES, RAFFINATES, ETC.

002 SUMP CAKE - COPPER CONTAMINATED, LOW URANIUM

003 NON-RECOVERABLE TRASH - FOR STORAGE OR SHIPMENT FOR OFF-SITE BURIAL, see p. 1.09

004 CONTAMINATED STEEL AFTER WASHING AND/OR CLEANING

005 CONTAMINATED ZIRCONIUM

006 CONTAMINATED LEATHER GLOVES FOR LAUNDRY

007 TRAILER CAKES, WASTE SLURRIES, RAFFINATES NOT MEETING DISCARD SPECIFICATION

008 GRIT BLAST RESIDUE

009 CONTAMINATED OIL - SOLUBLE; COOLANT

010 CONTAMINATED WATER, CONTAINING CHLORIDES

011 CONTAMINATED SOIL, ROCKS, SAND, BRICKS AND CERAMICS

012 CONTAMINATED WATER OR SUMP LIQUOR, NON-CHLORIDE

013 CONTAMINATED SOLVENT OR ORGANIC CHEMICAL - STENCIL TYPE OF CHEMICAL OR SOLVENT ON CONTAINER (SEE LIST OF SOLVENT AND CHEMICAL NAMES ON PAGE 1.21.)

014 GLASS AND SAMPLE BOTTLES

015 CONTAMINATED OIL, INSOLUBLE

016 CONTAMINATED COPPER - FOR DISCARD

017 CONTAMINATED GRAPHITE - UNCRUSHED BUT BROKEN INTO LARGE PIECES

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

LOW-GRADE RESIDUES (cont.)

018 CONTAMINATED ALUMINA-SODA LIME (HIGH Cl^-)

019 CONTAMINATED MAGNESIUM

020 CONTAMINATED MERCO-DRI AND HILCO CAKE

021 DRUM DECONTAMINATION RESIDUES; WET MGF_2

022 CONTAMINATED TBP AND/OR KEROSENE MIXTURES AND SLUDGES

023 OILY MGF_2

024 CONTAMINATED GRAPHITE - CRUSHED

025 CONTAMINATED METALLIC FILTER ELEMENTS

026 CONTAMINATED CARBON FILTER ELEMENTS

027 CONTAMINATED RAGS, PAPER AND POLYETHYLENE

028 CONTAMINATED ASBESTOS MATERIALS

029 DUST COLLECTOR BAGS

030 MAGNESIUM OXIDE AND MAGNESIUM ZIRCONATE FROM CRUCIBLE CLEANOUT

031 ROASTED MGF_2 (BLENDED WITH OTHER MATERIALS)

032 INCINERATOR ASHES - MATERIAL PASSING THROUGH GRATE OR SCREEN

033 INCINERATOR CINDERS - MATERIAL NOT PASSING THROUGH GRATE OR SCREEN

034 MGF_2 FOR MILLING OR DISCARD

035 MGF_2 OR CAF_2, GOOD LINER MATERIAL

036 MGF_2, -20 MESH, HIGH FREE METAL FOR PLANT 8 ROASTING (ENRICHED ONLY)

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

LOW-GRADE RESIDUES (cont.)

037 MGF_2, GROUND

038 MGF_2, +20 MESH, LOW U CONTENT, TO BE CRUSHED

039 SLUDGES, OILY

040 SLUDGES, FOR BLENDING AND SCREENING

041 SLUDGES, OILY, FOR OXIDATION, HIGH FREE METAL

042 SLUDGES, CLEANOUT, NON-OILY, FOR ROASTING

043 SLUDGES, SOLVENT - STENCIL TYPE OF SOLVENT ON CONTAINER (SEE LIST OF SOLVENT AND ORGANIC CHEMICAL NAMES ON PAGE 1.21.)

044 SLUDGES, SALT, SOFT, CHLORIDE (FOR PLANT 8 RECOVERY)

045 SLUDGES, SALT, SOFT, NON-CHLORIDE

046 SLUDGES, NON-OILY, FOR OXIDATION INCLUDING HIGH OR LOW FREE METAL

047 SAMPLES, NON-METALLIC, MISCELLANEOUS

048 OIL BURNER ASH

049 LEAD AND LEAD-CONTAMINATED MATERIALS

050 PCB MATERIALS, BALLAST, PCB-CONTAMINATED RAGS

051 MERCURY-CONTAMINATED MATERIALS, MERCURY BATTERIES

052 BARIUM-CONTAMINATED MATERIALS

053 NON-BURNABLE METAL WITH URANIUM CONTENT

4 HIGH LEVEL CLEANING RESIDUES

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

LOW-GRADE RESIDUES (cont.)

055 DEPLETED U METAL - NOT SUITABLE FOR REACTOR PRODUCT STREAMS (NOT TOP CROPS)

056 DEPLETED U INGOT CROPS (TOP CROPS) FROM PRIMARY INGOTS

057 WET CRUSHED SLAG FROM FURNACE POT BLOW-OUTS

058 CONTAMINATED CaF_2 - MgO

059 ASH FROM BURNING DUST COLLECTOR BAGS

060 FURNACE SALT, SOLIDIFIED, CHLORIDE (FOR PLANT 8 RECOVERY)

061 FURNACE SALT, SOLIDIFIED, NON-CHLORIDE

062 DUST COLLECTOR RESIDUES - HIGH FLUORIDE

063 KOH REVERSION CAKE

064 DUST COLLECTOR RESIDUES, PYROPHORIC, HIGH FLUORIDE

065 SCRAP SALTS, HIGH FLUORIDE, INCLUDING FLOOR SWEEPINGS

066 SCRAP SALTS, LOW FLUORIDE, INCLUDING FLOOR SWEEPINGS

067 WET SUMP OR FILTER CAKE, HALIDE CONTD

068 WET SUMP OR FILTER CAKE, OIL CONTD

069 WET SUMP OR FILTER CAKE, NON-OILY AND NON-HALIDE

070 ROCKWELL SPILLS

071 ROCKWELL CLEANINGS

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

LOW-GRADE RESIDUES (cont.)

072 U OR TH NITRATE SOLUTIONS, HIGH IMPURITY SUCH AS ZIRNLO DECOPPERING SOLUTIONS - FOR REFINERY PROCESSING

073 U OR TH CHLORIDE OR FLUORIDE SOLUTIONS, HIGH IMPURITY - SUCH AS PLANT 8 METAL DISSOLVER PRODUCT - NOT FOR REFINERY FEED

074 U OR TH SULPHATE SOLUTIONS

075 CLAD METAL FOR HNO_3 DISSOLVER

076 ZIRNLO ENDS - TO BE CLASSIFIED FOR RECOVERY

077 DRY CRUSHED SLAG FROM FURNACE POT BLOW-OUTS

078 OFF-SPEC TH OXALATE, FRENCH SOURCE

079 UNFIRED REDUCTION CHARGES PLUS MGF_2 FROM LINER CAVE-INS

080 PARTIALLY OXIDIZED METAL FOR SORTING CONTAINING METL-X

081 PARTIALLY OXIDIZED METAL FOR SORTING CONTAINING NO METL-X

082 OFF-SPEC UF_4 OR TH_4

083 U OR TH CHLORIDE SALTS, REJECT

084 BAD REDUCTION (NO DERBY)

085 U_3O_8 - ROTEXED - OTHER THAN PLANT 8'S OWN PRODUCT

086 U308 ROTEXED - PLANT 8'S OWN PRODUCT NOT MEETING REFINERY SPECIFICATIONS FOR CONTINUOUS DIGESTION

087 ROASTED SUMP CAKE - HIGH FLUORIDE - FOR MILLING

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

LOW-GRADE RESIDUES (cont.)

088 UNROASTED BUT MILLED MGF_2 (BLENDED WITH OTHER MATERIALS)

089 U_3O_8 ROTEXED - FROM CONCRETED CHIPS - CALCIUM

R 090 THORIUM RESIDUES

R 091 MAGNESIUM URANATE

095 COLD METAL OXIDES - NON RADIUM-BEARING

096 AUSTRALIAN RADIUM CAKE

097 RADIUM-BEARING MATERIALS - SAMPLES, K-65, INCLUDING Q-11 CONTAMINATED MATERIALS

098 MATERIAL HELD FOR HISTORICAL PURPOSES

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

HIGH-GRADE RESIDUES

100 SCRAP U_3O_8 OR THO_2, LOW FLUORIDE

101 SCRAP U_3O_8 OR THO_2, HIGH FLUORIDE

102 SCRAP UO_2

103 INGOT CROPS (TOP CROPS) FROM PRIMARY INGOTS

104 METAL SPILLS AND EXTRUSION ENDS; METAL HIGH IN IMPURITIES AND SPILLS

105 THO_2 PRODUCED FROM UNPURIFIED HANFORD THORIUM NITRATE VIA THORIA GEL PROCESS

106 CHIPS EMBEDDED IN CONCRETE - HIGH CALCIUM

107 CHIPS AND TURNINGS CONTAMINATED WITH NON-U MATERIALS - FOR OXIDATION

108 WET PHOSPHATE CAKE

109 SAWDUST FOR OXIDATION

110 NON-BRIQUETTABLE CHIPS AND TURNINGS FOR OXIDATION

111 BRIQUETTALE CHIPS AND TURNINGS FROM STANDARD METAL

112 BRIQUETTABLE CHIPS AND TURNINGS, HIGH IMPURITIES, FOR BRIQUETTING AND DOUBLE MELTING

113 ZIRCONIUM CLAD METAL, FROM OFF-SITE, TO BE DECLAD BY ZIRNLO SYSTEM

114 ZIRNLO FEED, CLASSIFIED AND SAWED

115 WET THORIUM OXALATE CAKE

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

HIGH-GRADE RESIDUES (cont.)

116 WET THORIUM HYDROXIDE

117 WET AMMONIUM DIURANATE CAKE

118 HOLLOW CORES WITH BROKEN DRILLS - ALL TYPES - BITS TO BE REMOVED AND CORES PICKLED PRIOR TO REMELT

119 SOLID METAL, OTHER THAN CORES, WITH EMBEDDED STEEL

120 CHEMICAL REJECT PRIMARY INGOTS

121 U_3O_8, +8 MESH - HIGH FLUORIDE

122 U_3O_8, +8 MESH - LOW FLUORIDE

123 CALCIUM URANATE

124 ZIRNLO; PARTIALLY DECLAD FUEL ELEMENTS

125 UNRECYCLED SLAG +20 MESH, BALL MILL PRODUCT

126 OXIDES MIXED WITH ZIRCONIUM BUT CLAD WITH OTHER ELEMENTS

128 CLAD URANIUM METAL; DECLAD BY MACHINING OR CHEMICAL TREATMENT

129 DIRTY PRILL, CODE 5 DERBIES, AND PLANT 1 TITAN MILL CLEAN-OUT, HIGH U CONTENT

130 PARTIALLY OXIDIZED METAL FOR DISSOLVER

131 PARTIALLY OXIDIZED METAL OXIDATION FEED

132 DUST COLLECTOR RESIDUES, LOW FLUORIDE

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

HIGH-GRADE RESIDUES (cont.)

133 OXIDES CLAD OR MIXED WITH ALUMINUM

134 U_3O_8 FOR REOXIDATION

135 DUST COLLECTOR RESIDUE, HIGH FLUORIDE, GREATER THAN 20% ASSAY

136 METAL TO BE OXIDIZED

137 MISCELLANEOUS MATERIAL - RECOVERY METHOD TO BE DETERMINED (NOT FOR USE BY INDIVIDUAL PLANTS)

138 OXIDES CLAD OR MIXED WITH ANY METALLIC ELEMENT OTHER THAN ALUMINUM, ZIRCONIUM OR STAINLESS STEEL

139 URANIUM ALLOYED OR CANNED WITH ELEMENTS OTHER THAN ALUMINUM, MOLYBDENUM OR ZIRCONIUM

140 OXIDES CLAD OR MIXED WITH ZIRCONIUM

141 CLAD METAL FOR ACID DISSOLUTION - NOT FOR ZIRNLO PROCESSING

142 OXIDES CLAD OR MIXED WITH STAINLESS STEEL

143 ROASTED CALCIUM-PRECIPITATED SUMP AND FILTER CAKES

144 OFF-SITE SUMP AND FILTER CAKES AFTER ROASTING AT FEMP

145 ROASTED AMMONIUM-PRECIPITATED SUMP AND FILTER CAKES

146 ROASTED MAGNESIUM-PRECIPITATED SUMP AND FILTER CAKES

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

REFINERY FEEDS

150 URANYL OR THORIUM NITRATE SOLUTION

151 OFF-SPEC THO_2, FRENCH SOURCE

152 U_3O_8 ROTEXED PLANT 8 FURNACE PRODUCT

153 -8 MESH PRODUCT FROM OXIDIZING +8 METAL

154 U_3O_8 ROTEXED PLANT 8 FURNACE PRODUCT

155 U_3O_8 -8 MESH FROM ROTEXING OF OTHER THAN PLANT 8'S OWN PRODUCTS - LOW FLUORIDE

156 MILLED UO_2

157 REJECT UO_3

158 PHOSPHATE ASH

159 ROASTED, MILLED AND/OR SCREENED CALCIUM-PRECIPITATED SUMP AND FILTER CAKES

160 IMPURE URANYL OR THORIUM NITRATE - SOLID

161 URANIUM CARBIDE, UC

162 OFF-SITE SUMP AND FILTER CAKES AFTER ROASTING, MILLING, AND/OR SCREENING AT FEMP

163 ROASTED, MILLED AND/OR SCREENED AMMONIUM-PRECIPITATED SUMP AND FILTER CAKES

164 ROASTED, MILLED AND/OR SCREENED MAGNESIUM-PRECIPITATED SUMP AND FILTER CAKES

165 U_3O_8 - NOT REQUIRING RE-OXIDATION

166 UO_2 (OR THO_2) PELLETS - REFINERY FEED

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

REFINERY FEEDS (cont.)

167 UO_2 (OR THO_2) POWDER - REFINERY FEED

168 CRUSHED FURNACE SALTS AND SLUDGES
NON-CHLORINE

169 ROASTED FURNACE SALTS AND SLUDGES
NON-CHLORINE

170 ORE CONCENTRATE - MISCELLANEOUS

190 U_3O_8 FOR RE-OXIDATION

191 RE-OXIDIZED ENRICHED CALCINER U_3O_8 FOR
SCREENING AND MILLING

192 OXIDE FOR SCREENING AND MILLING

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

INTERMEDIATE PRODUCTS

200 UO_3 PRODUCT

201 UO_3 REACTOR RECYCLE TAILS

202 UO_2 OR THO_2 PRODUCT

203 UF_6, URANIUM HEXAFLUORIDE

204 PURIFIED URANYL OR THORIUM NITRATE SOLUTION

205 THO_2 PRODUCED FROM SOL-GEL PROCESS

206 BLENDED UF_4 OR TH_4 CHARGE

207 PURIFIED URANYL OR THORIUM NITRATE SOLID

209 URANIUM OR THORIUM TETRACHLORIDE

210 UF_4 OR TH_4

211 UF_4 FROM PILOT PLANT UF_6

212 UF_4 FROM HANFORD UO_3

214 U_3O_8 FROM RECYCLE UO_3 (ROR PROCESS)

215 THORIUM HYDROXIDE, DRY

216 CHARGED UF_4 POTS, WIP

218 CLEAN PRILL FOR DOUBLE MELTING

219 METAL FROM SPILLS FOR DOUBLE MELTING

220 CODE 2 DERBIES FOR DOUBLE MELTING OR SHOT CLEANING

221 SOLID METAL FOR PICKLING PRIOR TO REMELT DOES NOT REQUIRE BLENDING (<12")

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

INTERMEDIATE PRODUCTS (cont.)

222 SOLID METAL - INCLUDES PHYSICAL BUT NOT CHEMICAL REJECT INGOTS; TO BE SAWED OR CRUSHED AND PICKLED PRIOR TO REMELT (≥12")

223 SOLID METAL TO BE SAWED, SHEARED, OR CRUSHED, BUT NOT PICKLED PRIOR TO REMELT

224 SOLID METAL, NOT PICKLED, OTHER THAN SPILLS AND TOP CROPS, FOR DOUBLE MELT

225 SR STANDARD METAL TO BE SAWED AND PICKLED PRIOR TO REMELT

227 METAL SAMPLES FOR DOUBLE MELTING

228 SOLID METAL TO BE PICKLED

229 FIRST GENERATION TOP CROPS FROM PRODUCT INGOTS - FOR PRIMARY INGOT REMELT CHARGES

230 SAWED SECTIONS, REQUIRING PICKLING, FROM PRIMARY INGOTS CONTAINING FIRST GENERATION TOP CROPS

231 SAWED SECTIONS, REQUIRING PICKLING, FROM PRIMARY INGOTS CONTAINING NO TOP CROP METAL

232 PICKLED METAL FOR DOUBLE MELTING - OTHER THAN FIRST GENERATION TOP CROPS

233 CLASSIFIED SHAPES FOR DOUBLE MELTING

234 PHYSICAL REJECT BILLETS TO BE SAWED PRIOR TO REMELT

235 TUBULAR ELEMENTS TO BE CRUSHED

236 EXTRUSION BUTTS TO BE PICKLED

237 PARTIALLY DECLAD METAL, OTHER THAN ZIRNLO, FOR DOUBLE MELTING

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

INTERMEDIATE PRODUCTS (cont.)

238 SOLID METAL FOR PICKLING AND DOUBLE MELTING, OTHER THAN FIRST GENERATION TOP CROPS

239 CHEMICAL REJECT SAWED REMELT METAL - TO BE CAUSTIC LEACHED AND PICKLED

240 DOUBLE MELT INGOTS TO BE SAWED AND PICKLED PRIOR TO REMELT

241 DOUBLE MELT INGOTS TO BE SAWED, BUT NOT PICKLED, PRIOR TO REMELT

242 CHEMICAL REJECT INGOTS (AND OTHER CHEMICAL REJECT MATERIAL) TO BE SAWED AND PICKLED, OR TO BE ROLLED, SHEARED AND PICKLED, PRIOR TO REMELT

243 CHEMICAL REJECT SOLID METAL TO BE SAWED, BUT NOT PICKLED PRIOR TO REMELT

244 CHEMICAL REJECT DOUBLE MELT INGOTS FROM DOUBLE MELTING TO BE SAWED AND PICKLED

245 CHEMICAL REJECT DOUBLE MELT SOLID METAL TO BE SAWED, BUT NOT PICKLED, PRIOR TO REMELT

246 INGOTS FROM OFF-SITE TO BE REWORKED

251 CHEMICAL REJECT SOLID METAL FOR PICKLING PRIOR TO REMELT

252 BRIQUETTES HIGH IN IMPURITIES FOR DOUBLE MELITNG

254 CODE 4 OR BOTTOM BURNOUT DERBIES FOR DOUBLE MELTING

260 TOP CROP FROM PRODUCT 4A FLAT BILLETS (SECOND GENERATION)

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

INTERMEDIATE PRODUCTS (cont.)

261 PHYSICAL SCRAP FROM RECYCLE 4A FLAT BILLETS
(SECOND GENERATION)

262 CHEMICAL SCRAP FROM RECYCLE 4A FLAT BILLETS
(SECOND GENERATION)

263 OFF-SITE 4A SCRAP RETURNS
(SECOND GENERATION)

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

REMELT FEEDS

300 DERBIES, CODE 1 AND CODE 3

302 BRIQUETTES

303 CHIPS-CLEANED NON-BRIQUETTABLE-SUITABLE FOR CASTING

304 SOLID REMELT METAL - LOW IMPURITIES - DOES NOT REQUIRE BLENDING OR PICKLING - NOT FROM DOUBLE MELTS

305 PICKLED ARF REMELT METAL

306 EXPERIMENTAL SHAPES - INCLUDING CLASSIFIED SHAPES NOT TO BE CRUSHED

307 ZIRNLO PRODUCT

308 INGOT CROPS AND DUDS

310 PICKLED CROPS FROM SR METAL

311 SR STANDARD SOLID METAL - FOR REMELT

313 PICKLED CROPS FROM HW METAL

314 PICKLED PRIMARY INGOT SECTIONS CONTAINING FIRST GENERATION TOP CROPS

315 PICKLED PRIMARY INGOT SECTIONS CONTAINING NO TOP CROP METAL

316 PICKLED Ti ALLOY REMELT SCRAP - DOES NOT REQUIRE BLENDING (NOT DERIVED FROM PRIMARY INGOTS)

322 CHEMICAL REJECT SOLID REMELT METAL - DOES NOT REQUIRE PICKLING

323 REJECT ELEMENTS - OUTER

324 REJECT ELEMENTS - INNER

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

REMELT FEEDS (cont.)

325 REJECT CORES

326 REJECT BILLETS, INCLUDING SAWED BILLET SECTIONS

327 PICKLED REJECT BILLETS OR BILLET SECTIONS

330 PRIMARY INGOT SECTIONS, NOT PICKLED, CONTAINING FIRST GENERATION TOP CROPS

331 PRIMARY INGOT SECTIONS, NOT PICKLED, CONTAINING NO TOP CROP METAL

333 PICKLED CHEMICAL REJECT CROPS

334 PICKLED CHEMICAL REJECT CROPS FROM DOUBLE MELT INGOTS

335 CRUSHED TUBULAR ELEMENTS

336 PICKLED EXTRUSION BUTTS

337 DECLAD METAL, OTHER THAN ZIRNLO

340 SECTIONS FROM CHEMICAL REJECT PRIMARY INGOTS, NOT PICKLED

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

CASTING PRODUCTS

401 SPECIAL SOLID INGOTS OR SLABS

402 SPECIAL HOLLOW INGOTS

403 SPECIAL CASTINGS, INCLUDING STATIC AND CENTRIFUGAL

404 N REACTOR INGOTS - RAW

405 N REACTOR INGOTS - DIRECT CASTINGS FOR FINISHED BILLET MACHINING

406 MARK 31 CASTINGS - RAW - INNER

407 MARK 31 CASTINGS - RAW - OUTER

408 MARK 31 CASTINGS - FINISHED - INNER

409 MARK 31 CASTINGS - FINISHED - OUTER

410 N REACTOR INGOTS - FINISHED

411 URANIUM SHOT

412 MARK 15 CASTINGS - RAW - INNER

413 MARK 15 CASTINGS - RAW - OUTER

414 MARK 15 CASTINGS - FINISHED - INNER

415 MARK 15 CASTINGS - FINISHED - OUTER

416 MARK 25 CASTINGS - RAW - INNER

417 MARK 25 CASTINGS - RAW - OUTER

418 MARK 25 CASTINGS - FINISHED - INNER

419 MARK 25 CASTINGS - FINISHED - OUTER

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

ROLLING AND EXTRUSION PRODUCTS

450 BILLETS, ROLLING MILL

451 MARK 15 EXTRUDED TUBES - INNER

452 MARK 15 EXTRUDED TUBES - OUTER

453 N REACTOR EXTRUDED TUBES

454 N REACTOR RAW BILLETS - SAWED EXTRUSIONS

455 MARK 31 EXTRUDED TUBES - INNER

456 MARK 31 EXTRUDED TUBES - OUTER

457 SPECIAL RODS AND/OR TUBES

459 N REACTOR RAW BILLETS - UPSET FORGED

461 MARK 25 EXTRUDED TUBES - INNER

462 MARK 25 EXTRUDED TUBES - OUTER

CHAPTER 3 MATERIAL DESCRIPTION CODES (cont.)

MACHINING PRODUCTS

500 MARK 31 ELEMENTS - INNER

501 MARK 31 ELEMENTS - OUTER

503 N REACTOR FINISHED BILLETS FROM EXTRUSIONS

505 N REACTOR FINISHED BILLETS FROM DIRECT CASTINGS

506 SPECIAL MACHINED SHAPES

507 MARK 15 ELEMENTS - INNER

508 MARK 15 ELEMENTS - OUTER

509 MARK 25 ELEMENTS - INNER

510 MARK 25 ELEMENTS - OUTER

CHAPTER 4 SOURCE OR ORIGIN CODES

PLANT 1 CODES

100 PLANT 1 GENERAL

101 PLANT 1 MAINTENANCE

102 MAINTENANCE SHOP (RCRA MATERIALS)

103 OIL STORAGE AREA (RCRA & TSCA)

105 PLANT 1 CONSTRUCTION WASTE

107 SOURCE UNKNOWN

110 PLANT 1 MILLING

111 DRUM DUMPER

112 TITAN MILL

113 DUST COLLECTOR NUMBER 64

114 DUST COLLECTOR NUMBER 76

115 THREE PHASE GALIGHER SAMPLER

116 HOPPER OR DRUM FILLING STATION

117 HOFFMAN VACUUM

119 FITZ MILL

120 PLANT 1 STILL

121 DRUM SIPHON

122 STILL TANK

123 WATER DRUMMING

124 RECLAIMED FLUID DRUMMING

NOL

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PLANT 1 CODES (cont.)

130 **PLANT 1 DRUM RECONDITIONING**

131 SHOT SCREEN

132 WHEELABRATOR SHOT BLAST UNIT

133 DRUM ROLLER

134 PANGBORN DUST COLLECTOR

135 DRUM PAINTING BOOTH

136 DRUM DRYER

137 DRUM BALER

140 **PLANT 1 SAMPLING**

141 SMALL SHEATHED AUGER

142 WHEELABRATOR DUST COLLECTOR

143 LARGE SHEATHED AUGER

144 PIPE SAMPLER

145 SLY DUST COLLECTOR

150 COPPER SHREDDER

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PLANTS 2 AND 3 CODES

200 PLANTS 2 AND 3 GENERAL

201 PLANTS 2 AND 3 MAINTENANCE

202 MAINTENANCE SHOP (RCRA MATERIALS)

203 OIL STORAGE AREA (RCRA & TSCA)

210 PLANT 2 DIGESTION

211 SOUTH SIDE DIGESTORS

212 NORTH SIDE DIGESTORS

213 TURNER-HAWES DUST COLLECTOR

214 DAY-HOFFMAN DUST COLLECTOR

220 METAL DISSOLVER

221 OLIVER FILTER

222 METAL DISSOLVER GRATE

225 EXTRACTION

226 SOUTH SIDE EXTRACTION COLUMN LINE

227 NORTH SIDE EXTRACTION COLUMN LINE

228 MIXER-SETTLER

230 SOLVENT TREATMENT

235 HOT RAFFINATE BUILDING

236 FILTERS

240 TRASH BALER

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PLANTS 2 AND 3 CODES (cont.)

245 REFINERY SUMP SYSTEM

246 DORR THICKENERS

247 FILTERS

250 RAFFINATE EVAPORATORS

255 ABSORBERS

256 PLANT COLUMN ABSORBERS

260 DENITRATION SYSTEM

261 SCRUBBER SYSTEM

262 SOUTH SIDE PACKAGING

263 NORTH SIDE PACKAGING

267 SAFE GEOMETRY EVAPORATOR CALCINER

268 PULLMAN VACMOBILE

270 DRUM DIGESTION

271 CARTRIDGE FILTER

272 PLATE AND FRAME FILTER

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PILOT PLANT CODES

300 PILOT PLANT GENERAL

301 PILOT PLANT MAINTENANCE

302 MAINTENANCE SHOP (RCRA MATERIALS)

303 OIL STORAGE AREA (RCRA & TSCA)

310 GREEN SALT PRODUCTION

311 REACTOR NUMBER 1

312 REACTOR NUMBER 2

313 DUST COLLECTORS

314 VACUUM - PORTABLE

315 AUTOCLAVE

316 COLD TRAP

320 METAL REDUCTION PILOT PLANT

321 SLY DUST COLLECTOR

322 HOFFMAN VACUUM

323 ROCKWELL FURNACES

324 BREAKOUT STATION

330 DERBY SHOT BLASTING

331 PANGBORN ROTO-BLAST UNIT

332 SPENCER VACUUM

333 EAST WHEELABRATOR DUST COLLECTOR

334 DUCLONE CYCLONE

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PILOT PLANT CODES (cont.)

335 SHOT PRODUCTION UNIT

336 SHOT TANK

340 PILOT PLANT REMELT AND CASTING

341 REMELT FURNACE

343 CRUCIBLE BURNOUT

345 SAWS

346 WEST WHEELABRATOR DUST COLLECTOR

347 HOFFMAN VACUUM

350 PILOT PLANT HEAT TREATING

351 SALT BATH

352 WATER QUENCH

353 OIL QUENCH

355 PILOT PLANT METAL DISSOLVING

356 HNO3 PICKLING OR DECOPPERING

357 HF OR HCl DISSOLVER

358 FILTER

359 NEUTRALIZER

360 PILOT PLANT AUXILIARY EQUIPMENT

361 PRECIPITATOR

362 FILTER

364 TRAY DRYER-THORIUM

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PILOT PLANT CODES (cont.)

365 PILOT PLANT OXIDIZING

366 SETTLING TABLE

367 OXIDATION FURNACE

368 AIR FILTER

369 S&W GLO-BAR FURNACE

370 PILOT PLANT MILLING

371 JAW CRUSHERS

372 BALL MILL-THORIUM

375 PILOT PLANT SOLVENT EXTRACTION

376 SIX-INCH EXTRACTION COLUMN

377 BOILDOWN TANKS

378 PRODUCT TANK

379 TWO-INCH EXTRACTION COLUMN

380 PILOT PLANT SUMP

381 SUMP CATCH BASIN

382 PRECIPITATOR

383 UNCONTAMINATED SUMP

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PLANT 4 CODES

400 PLANT 4 GENERAL

401 PLANT 4 MAINTENANCE

402 MAINTENANCE SHOP (RCRA MATERIALS)

403 OIL STORAGE AREA (RCRA & TSCA)

407 BANK 7

408 BANK 8

409 BANK 9

420 DUST COLLECTORS - GENERAL

421 DUST COLLECTOR G4-1

422 DUST COLLECTOR G4-2

423 DUST COLLECTOR G4-15

424 DUST COLLECTOR G4-4

425 DUST COLLECTOR G4-5

426 DUST COLLECTOR G4-6

427 DUST COLLECTOR G4-7

429 DUST COLLECTOR G4-9

431 DUST COLLECTOR G4-11

432 DUST COLLECTOR GR-12

433 DUST COLLECTOR G4-13

434 DUST COLLECTOR G4-14

435 PLANT 4 SUMP

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PLANT 4 CODES (cont.)

440 PACKAGING STATION - GENERAL

441 EAST (NO. 1) PACKAGING STATION

442 WEST (NO. 2) PACKAGING STATION

443 SOUTHWEST (NO. 3) PACKAGING STATION

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PLANT 5 CODES

500 PLANT 5 GENERAL

501 PLANT 5 MAINTENANCE

502 MAINTENANCE SHOP (RCRA MATERIALS)

503 OIL STORAGE AREA (RCRA & TSCA)

509 DRUM STORAGE PAD

510 METAL REDUCTION AREA

511 BLENDERS

512 BLENDING FILLING CAP AND LID AREA
DUST COLLECTORS 251, 253

513 JOLTER AREA
DUST COLLECTORS 247, 248

514 BOMB FILLING STATION

515 CAP AND LID

516 ROCKWELL FURNACES

517 COOLING TANKS

518 BREAKOUT STATIONS

519 EAST BREAKOUT AREA
DUST COLLECTORS

520 WEST BREAKOUT AREA
DUST COLLECTORS

521 DERBY QUENCH

522 SLAG CONVEYOR PIT

523 POT REAMING STATION

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PLANT 5 CODES (cont.)

530 CASTING AREA

531 REMELT FURNACES

532 SEPARATION BOOTH

533 REMELT
DUST COLLECTOR 260

534 CRUCIBLE BURNOUT

535 CRUCIBLE BURNOUT
DUST COLLECTOR 261

536 SLY DUST COLLECTOR 100

537 GRAPHITE LATHE

538 HILCO OIL FILTER

539 BURNOUT AND MOLD TANKS

540 GRAPHITE BREAKUP STATIONS

545 SUMP TREATMENT AREA

550 SAW AREA

551 HACK SAW

552 NORTH CIRCULAR SAW

553 EAST CIRCULAR SAW

554 WEST CIRCULAR SAW

560 EAST SLAG PLANT

561 CRUSHER

562 COARSE SEPARATOR

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PLANT 5 CODES (cont.)

564 BIN 4: -20 MESH MAGNESIUM FLUORIDE

565 BIN 3: +20 MESH MAGNESIUM FLUORIDE

566 BIN 5, 6, 7, 8: MAGNESIUM FLUORIDE

570 WEST SLAG PLANT

571 CRUSHER

572 COARSE SEPARATOR

573 FINE SEPARATOR

574 -20 MESH MAGNESIUM FLUORIDE

575 +20 MESH MAGNESIUM FLUORIDE

576 GOOD LINER SOURCE

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PLANT 6 CODES

600 PLANT 6 GENERAL

601 PLANT 6 MAINTENANCE

602 MAINTENANCE SHOP (RCRA MATERIALS)

603 OIL STORAGE AREA (RCRA & TSCA)

610 ROLLING

611 INGOT FURNACE

612 BLOOMING MILL

613 CROP SHEAR OR GAG SHEAR

614 EQUALIZER FURNACE

615 CONTINUOUS MILL

616 FLYING SHEAR

617 COOLING BEDS

618 STRAIGHTENER

619 INSPECTION - ROD AREA

620 MACHINING

621 BLANKING ACMES

622 CROSS TRANSFERMATIC

623 CENTERLESS GRINDERS

624 DRILLING ACMES

625 SUNDSTRAND LATHES

626 HEALD BOREMATICS

627 TURRET LATHES

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PLANT 6 CODES (cont.)

631 BARDONS AND OLIVER CUTOFF LATHE

632 CNC MACHINE

640 HEAT TREATING

642 SALT-OIL FURNACE

643 NU SAL FURNACE

645 BRIQUETTING

646 CHIP CRUSHER

647 CHIP PICKLING TANKS

648 CHIP BRIQUETTING PRESS

650 DUST COLLECTORS

652 TURNER HAWES

655 WATER TREATMENT AREA

656 COLLECTION TANKS

657 PRECIPITATORS

658 FILTERS

659 HOFFMAN CLARIFIES

660 DEGREASING AND PICKLING

661 DERBY PICKLING

662 CORE PICKLING

663 REMELT METAL PICKLING

665 INSPECTION

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

MISCELLANEOUS FACILITIES CODES

700 WASTE MANAGEMENT

702 MAINTENANCE SHOP (RCRA MATERIALS)

703 OIL STORAGE AREA (RCRA & TSCA)

705 CONSTRUCTION

710 K-65 GENERAL

711 SILO #1 K-65

712 SILO #2 K-65

713 SILO #3 COLD-METAL OXIDE

714 SILO #4

R 715 BUILDING 64

716 BUILDING 65

R 717 BUILDING 65 - WEST PAD

R 718 BUILDING 67

R 719 BUILDING 68

721 CHEMICAL PITS

725 ENVIRONMENTAL MONITORING

730 LABORATORY GENERAL

731 OPERATIONS & ENGINEERING SERVICES

732 ANALYTICAL

733 ANALYTICAL LABORATORY HAZARDOUS WASTE

734 BIO-CHEMISTRY

735 SERVICE BLDG. AND ADMINISTRATION BLDG.

R CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

MISCELLANEOUS FACILITIES CODES (cont.)

736 LAUNDRY

738 GARAGE RCRA

739 GARAGE OIL

740 PROCUREMENT

741 GARAGE

742 DECONTAMINATION

743 STORES-RECEIVING

744 TRUCK DOCK

745 MAINTENANCE SECTION

746 MACHINE SHOP (RCRA)

747 MACHINE SHOP OIL STORAGE (RCRA & TSCA)

748 PAINT SHOP (RCRA)

749 INSTRUMENT SHOP (RCRA)

755 QUALITY AND SAFETY DEPARTMENT

756 DOSIMETRY LABORATORY HAZARDOUS WASTE

759 BUILDING 3045 - LABORATORY MACHINE SHOP

760 ENGINEERING

761 GENERAL SUMP

762 INCINERATOR

763 OIL BURNER AT BOILER PLANT (OPERATED BY PRODUCTION)

764 GRAPHITE BURNER

R

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

MISCELLANEOUS FACILITIES CODES (cont.)

765 WATER TREATMENT

766 SEWAGE TREATMENT

767 BOILER PLANT

768 BOILER PLANT (RCRA)

769 BOILER PLANT OIL STORAGE

775 LAB MAINTENANCE SHOP (RCRA)

776 LAB OIL STORAGE AREA (RCRA & TSCA)

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PLANT 8 CODES

800 PLANT 8 GENERAL

801 PLANT 8 MAINTENANCE

802 MAINTENANCE SHOP (RCRA MATERIALS)

803 OIL STORAGE AREA (RCRA & TSCA)

805 DRUM WASHER

806 DRUM RECONDITIONING

810 WET-CHEMICAL SYSTEM

811 PRIMARY CALCINER

812 PLANT 8 MILLING

813 SUMP

814 DIGESTION

815 EIMCO FILTERS

816 PRECIPITATION

817 OLIVER FILTER

818 CALCINATION

819 LEACH TANK

820 OXIDATION SYSTEM

821 CRUSHER

822 ROTEX SCREENING

823 MUFFLE FURNACE

824 BOX FURNACE

825 OXIDATION FURNACE NUMBER 1

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PLANT 8 CODES (cont.)

826 ROTARY KILN

827 OXIDATION FURNACE NUMBER 2

836 THO2 PLANT 8

845 HYDRAULIC SEPARATOR

852 BLENDING AND SCREENING OPERATION

853 OIL DECANTATION

854 DUST COLLECTOR & FILTER BAG WASHING

855 AIR SEPARATOR

856 HAND SORTING

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PLANT 9 CODES

900 PLANT 9 GENERAL

901 PLANT 9 MAINTENANCE

902 MAINTENANCE SHOP (RCRA MATERIALS)

903 OIL STORAGE AREA (RCRA & TSCA)

910 REDUCTION

911 JOLTERS

912 F MACHINE AND CAPPING

913 ROCKWELL FURNACES - MOLTEN SALT CLEANING

914 BREAKOUT STATION

915 TURNER-HAWES, HOFFMAN VACUUM SYSTEM

916 COOLING TANK

917 SPENCER PORTABLE VACUUM

920 CASTING

921 NPR FURNACE

922 CINCINNATI MILLING MACHINE

924 NPR PRIMARY HOFFMAN VACUUM UNIT

925 NPR BAG HOFFMAN VACUUM UNIT

926 NPR AAF DUST COLLECTOR

927 NPR AAF DUST COLLECTOR PRIMARY SEPARATOR

R 933 G9-NI 1035 DUST COLLECTOR

935 EXTRUSION SAWING

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PLANT 9 CODES (cont.)

940 MACHINING

941 GISHOLT TURRET LATHE

942 J+L AUTOMATIC LATHE

945 L+S DUOMATIC LATHE

949 J+L TURRET LATHE

951 LEBLOND RAPID BORER

953 WARNER AND SWASEY LATHE

954 MONARCH ENGINE LATHE

955 BRIQUETTING

956 CRUSHER AND METSO WASH

957 CHIP PICKLING AND RINSING

958 CHIP CENTRIFUGING

959 MAGNETIC SEPARATOR & BRIQUETTE PRESS

960 PICKLING

961 REMELT PICKLING AND RINSING

962 CORE DEGREASING AND PICKLING

965 SUMP LIQUOR PROCESSING

966 COLLECTION TANKS

967 PRECIPITATORS

968 FILTERS

970 HEAT TREATING

CHAPTER 4 SOURCE OR ORIGIN CODES (cont.)

PLANT 9 CODES (cont.)

980 ZIRNLO PROCESS - GENERAL

981 HACKSAW

982 DEGREASER

983 DECOPPERING

984 DEZIRCING

985 ACID FILTRATION

986 NEUTRALIZATION

987 NITRIC ACID PICKLE

988 KOH PICKLE

MPC ESTINGHOUSE MATERIALS COMPANY OF OHIO PERATIONS DOCUMENT PROGRAM	Page 1 of 13 Revision No: 0	
IONS DURE	COMPLETING THE LOW LEVEL RADIOACTIVE WASTE (LLRW) CONTAINER DATA SHEET (Per CIO C90-036)	SOP 20-C-618 AREA: As Applicable
uthorization: R. L. Gardner, perations Facilities/Waste Mgt.	Supersedes: None	Issue Date: 03-11-91

1.0 PURPOSE

The purpose of this document is to provide the procedure for completing the LLRW data sheet needed to certify packaged waste for disposal.

2.0 APPLICABILITY

This procedure shall apply to organizations generating and/or packaging low level radioactive waste designated for disposal.

3.0 RESPONSIBILITIES

3.1 The supervisor of the organization generating and/or packaging shall be responsible for the following:

3.1.1 Ensuring only trained personnel complete the applicable sections of the "LLRW Container Data Sheet" per this procedure.

3.1.2 Reviewing and signing for approval applicable sections of the data sheet in accordance with this procedure.

3.2 The waste generator/packager shall be responsible for completing the data sheet as specified per this procedure.

3.3 Quality Operations shall be responsible for signing Sections I and II of the data sheet to verify construction generated waste packages.

3.4 An authorized Waste Management operator shall be responsible for completing Section III of the data sheet.

3.5 The Waste Management Shipping Supervisor shall review the completed data sheet, resolve discrepancies, and distribute copies per this procedure.

4.0 DEFINITIONS

4.1 Waste Generator/Packager - An individual who fills the container and/or prepares the waste container for shipment and completes applicable sections of the "LLRW Container Data Sheet".

5.0 REFERENCES

5.1 SOP 20-C-601, "Packaging Low Level Radioactive Waste (L-LRW) for Offsite Disposal"

2 SOP 1-C-602, "Low Level Radioactive Waste (L-LRW) Shipment Preparation"

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6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS

None

7.0 PROCEDURE

NOTE: The "LLRW Container Data Sheet", Form FMPC-REST-3236 (See Figure 1) shall be filled out as the packaging is performed per the applicable procedure.

NOTE: Waterproof ink shall be used to complete the LLRW Container Data Sheet.

7.1 Empty Container Certification

7.1.1 Complete Section I of the "LLRW Container Data Sheet", Form FMPC-REST-3236 per Table 1.

7.1.1.1 If more than one item is listed per line on the data sheet, circle those items which are applicable.

7.1.2 Notify the supervisor of the waste generating/packaging area, or the Quality Operations Representative for construction generated waste, that Section I of the data sheet has been completed and requires an approval signature for Section I.

NOTE: Quality Operations or the supervisor shall designate the container is approved for filling and record date.

NOTE: Supervision shall follow construction generated waste guidelines per FMPC-720.

7.1.3 Fasten with wire (or an equivalent fastener) the "LLRW Container Data Sheet" on to the container.

7.1.4 When Section I of the data sheet is complete, proceed to Section 7.2.

7.2 Full Container Certification

7.2.1 Complete Section II of the data sheet per Table 2.

NOTE: Quality Operations or Waste Packaging Quality Assurance and Certification shall record the "DCAR number" and "Date Closed" as deemed necessary.

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7.0 PROCEDURE (cont.)

7.2.1.1 If more than one item is listed per line on the data sheet, circle those items which are applicable.

7.2.2 Notify the supervisor of the waste generating/packaging area, or the Quality Operations Representative for construction generated waste, that Section II of the data sheet has been completed and requires an approval signature for Section II.

7.3 Final Package Certification

NOTE: Section III of the "LLRW Container Data Sheet" shall be completed by an authorized Waste Management operator.

7.3.1 Complete Section III of the data sheet per Table 3.

NOTE: Quality Operations or Waste Packaging Quality Assurance and Certification shall record the "DCAR Number" and "Date Closed" as deemed necessary.

7.3.1.1 If more than one item is listed per line, circle those items which are applicable.

7.3.2 Check the data sheet to ensure completion of all items in Sections I, II, and III.

7.3.2.1 If the data sheet is complete, write "yes" in the space provided, sign name, and enter badge number and date.

7.3.2.2 If the data sheet is not complete, write "no" in the space provided.

7.0 PROCEDURE (cont.)

7.3.3 Submit the data sheet to the Waste Management Shipping Supervisor for review and approval signature. Notify the supervisor of any discrepancies or unusual circumstances.

NOTE: The Waste Management Shipping Supervisor shall review the data sheet and sign name with date indicating the package meets requirements for shipment.

NOTE: The Waste Management Shipping Supervisor shall distribute copies of the signed "LLRW Container Data Sheet" to MC&A and maintain the original data sheet on file until respective packages are submitted for certification and shipment. The original data sheet shall then be delivered to QA Certification for final verification and Certification files.

NOTE: Waste Management shall maintain a copy of the "LLRW Container Data Sheet" on file.

8.0 APPLICABLE FORMS

8.1 Form FMPC-REST-3236, "LLRW Container Data Sheet"

TABLE 1
"LLRW Container Data Sheet" Instructions for Empty Container Certification (Section I)

ITEM TITLE	INSTRUCTIONS	REFERENCE (1)
Serial No.	Record the serial number of the container or the serial number of the seal from the drum package.	N/A
Drum No.	Record drum number.	N/A
Container Type	Mark appropriate box indicating the container type as defined below: MB - metal box WB - wood box B - bale SL - sea/land D - drum or overpack	N/A
Empty Container	If container is empty, mark "YES". If container holds any amount of material, mark "NO".	SOP 20-C-601
Container Condition Acceptable	Indicate whether container condition is acceptable; free from damage by rust, holes, or dents which could jeopardize the integrity of the container.	SOP 20-C-601
Sealand Preparation Complete	Indicate whether sealand container preparation is complete.	SOP 20-C-601
Absorbent Added	Indicate whether absorbent has been added to container.	SOP 20-C-601

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TABLE 1 (cont.)

ITEM TITLE	INSTRUCTIONS	REFERENCE (1)
Liner Present	Indicate whether liner is present (applicable only to wood boxes).	SOP 20-C-601
Drain Plug Secure	Indicate whether drain plug is securely in place on bottom of metal box, if applicable.	SOP 20-C-601
Generator/Pkg Signature	Sign name, badge no., and date for completing the applicable Section 1 items.	N/A

(1) The procedure referenced provides the specific procedure steps corresponding to the items in Table 1.

TABLE 2
"LLRW Container Data Sheet" Instructions for Full Container Certification (Section II)

ITEM TITLE	INSTRUCTIONS	REFERENCE (1)
Origin	Specify where the waste was generated including construction project number, building, plant, area, and production process.	N/A
Material Type	List specific type or type(s) of material placed inside the container.	N/A
Material Code	Designate whether the material placed in the container corresponds to the material description or the FMPC Lot Code material identification.	SOP 20-C-601
Prohibited Materials	Indicate whether prohibited materials were placed in the container.	SOP 20-C-601
Free Liquids in Container	Indicate whether free liquid is present inside container.	SOP 20-C-601
Interplant Transfer	Indicate whether the container lid has been secured for interplant transport, including date closed.	SOP 20-C-601
Generator/Pkg Signature	Sign name, badge no., and date for completing the applicable Section II items.	N/A

(1) The procedure referenced provides the specific procedure steps corresponding to the items in Table 2.

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TABLE 3
"LLRW Container Data Sheet" Instructions for Final Container Certification (Section III)

ITEM TITLE	INSTRUCTIONS	REFERENCE (1)
Volume/Weight Capacity	Indicate whether space inside container has been fully utilized and meets container content and weight requirements.	1-C-602
Moisture/Liquid Present	Indicate whether container interior/exterior visibly shows moisture/liquid.	1-C-602
Absorbent Added	Indicate whether absorbent is added to container.	1-C-602
Liner Closed	Indicate whether liner has been folded over in a "closed" position.	1-C-602
Banding	Indicate whether banding is present and secure on container.	1-C-602
Radiological Dose Rates	Indicate whether radiological survey has been completed.	1-C-602
LSA/LQ/RQ Sticker	Indicate whether the radiological DOT identification sticker is on the container.	1-C-602
Markings Acceptable	Indicate whether container markings are acceptable.	1-C-602
Bolt Ring	Indicate whether bolt ring on drum package is properly closed/torqued.	1-C-602
Gasket/Caulking in Place	Indicate whether gasket/caulking is in place.	

(1) The procedure referenced provides the specific procedure steps corresponding to the items in Table 3.

TABLE 3 (cont.)

ITEM TITLE	INSTRUCTIONS	REFERENCE (1)
Pins/Bolts Retainer Ring Secure	Indicate whether pins/bolts/retainer ring are secure on lid.	1-C-602
Drain Plug Check (Red/Black Dot)	Indicate whether appropriate dot is present on container and drain plug is securely closed on metal box.	1-C-602
Package Condition Acceptable	Indicate whether condition of container is acceptable.	1-C-602
Wood Box Lid in Place	Indicate lid is secure on wooden box.	1-C-602
Material Added	List specific material added to container to meet package weight requirement and/or fill void spaces and record date material added. If no material is added, mark N/A for this item.	20-C-601
Gross	Record gross weight from container or 65 card.	N/A
Tare	Record tare weight from container or 65 card.	N/A
Net	Record new weight from container or 65 card.	N/A
Package Dimensions	Indicate size of container.	N/A
Lot Number	Record material lot sequence number from container or 65 card.	N/A

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TABLE 3 (cont.)

ITEM TITLE	INSTRUCTIONS	REFERENCE (1)
Container Number	Record container number within the same lot sequence.	1-C-602
Percent Combustible by Volume	Request amount from supervisor.	N/A
Shipment Number	Record assigned shipment number.	1-C-602
Waste Stream Number	Record waste stream number.	1-C-602

(1) The procedure referenced provides the specific procedure steps corresponding to the items in Table 3.

LLRW CONTAINER DATA SHEET

Section I — EMPTY CONTAINER CERTIFICATION DATA

Serial # _____

Container No. _____

Container Type:

VB ☐ SL ☐
☐ D ☐
☐

	YES	NO	N/A
Empty at Start			
Acceptable Condition			
Sealand Prep Complete			
Absorbent Added			
Liner Present			
Drain Plug Secure			

Pkg. Generator _____ Badge # _____ Date _____

Supervisor/PQA Signature _____ Badge # _____ Date _____

Section II — FULL CONTAINER CERTIFICATION DATA

Origin: _____

DCAR # _____ Date Closed _____

Ready for Interplant Transfer: _____ Date _____

Material Type: _____

	YES	NO	N/A
Material is as Coded			
Prohibited Materials			
Free Liquids in Container			

Pkg. Generator _____ Badge # _____ Date _____

Supervisor/PQA _____ Badge # _____ Date _____

LLRW CONTAINER DATA SHEET (Sheet 1 of 2)
Form No. FMPC REST-3236
Figure 1

R - MATERIAL REVISED, ADDED, OR DELETED.

Section III

FINAL PACKAGE CERTIFICATION DATA

	YES	NO	N/A		YES	NO	N/A
Max. Volume Utilization to Wt. Capacity				Pins/Bolts/Retainer Ring Secure			
Liquids or Excessive Moisture Present				Required Banding in Place			
Absorbent Added				Wood Box Lid in Place			
Liner Closed				Radiological Dose Rates			
Drain Plug Check (Red/Black Dot)				LSA/LQ/RQ Present			
Gaskets/Caulking in Place				Markings Acceptable			
Bolt Ring in Place/Torqued				Package Condition Acceptable			

Container Condition upon receipt: ☐ Acceptable ☐ Damaged

DCAR # _____
Date Closed _____

Package Dimens _____

Material Added: _____ Date _____

Source _____
Description _____
Quantity _____

Prohibited Materials Inspection:
Yes ☐ No ☐

Gross _____ lbs.
Tare _____ lbs.
Net _____ lbs.

Waste Stream No. ONLO-0000000 __ __

Lot Number: _____ - _____ - _____ - _____

Container No. _____

Percent Combustible by Volume: _____

Shipment No. WML __ __ __ __ __

Above Sections Complete _____

Final Pkg. Generator Signature _____ Badge # _____ Date _____

Waste Mgmt. Shipping Supervisor _____ Badge # _____ Date _____

LLRW CONTAINER DATA SHEET (Sheet 2 of 2)
FORM FMPC-REST-3236
Figure 1

R - MATERIAL REVISED, ADDED, OR DELETED.

OPERATIONS PROCEDURE	COMPLETING THE LOW LEVEL RADIOACTIVE WASTE (LLRW) CONTAINER DATA SHEET (Per CIO C90-036)	SOP 20-C-618 AREA: As Applicable
Authorization: R. L. Gardner, Operations Facilities/Waste Mgt.	Supersedes: None	Issue Date: 03-11-91

RECORD OF ISSUE/REVISIONS

DATE	REV. NO	DESCRIPTION AND AUTHORITY
03-11-91	0	Issued in accordance with CIO C90-036 per Request No. P90-355.

R - MATERIAL REVISED, ADDED, OR DELETED.

STEP 4.

437A

FEED MATERIALS PRODUCTION CENTER

DRUM MANAGEMENT PLAN

AUGUST 1990

RECORD OF REVISIONS

Revision No.	Date
0	8/90
1	4/91

List of Revisions

Figure 5.1
Page 10
Page 11
Figure 6.3

DRUM MANAGEMENT PLAN OUTLINE

1.0 Purpose of Plan

2.0 Objective of Plan

3.0 Summary of Amended Consent Decree Commitments for Drum Management

4.0 Physical Description of Plant 1 Pad Area and Activities

- 4.1 Aisle Spacing
- 4.2 Inspections

5.0 Plant 1 Pad Containment Staging Area Operation

6.0 Indoor Drum Storage

- 6.1 Scope
- 6.2 Criteria for Drum Movement
- 6.3 Aisle Spacing
- 6.4 Drum Inspections

7.0 Material Storage Evaluations

8.0 Spill Response Actions

APPENDIX I DRUM TYPES

ADDENDUM I HYDROGEN GENERATING MATERIAL (April 1991)

1.0 PURPOSE OF PLAN

The purpose of the Feed Materials Production Center (FMPC) Drum Management Plan is to set forth the program that is in place to minimize environmental impact of stored, drummed materials at the FMPC. The sections contained in this plan outline the aggressive operational actions and administrative controls which have been implemented to enhance FMPC drum storage.

2.0 OBJECTIVE OF PLAN

The objective of the FMPC Drum Management Plan is to document drum management activities consistent with the commitments contained in the Amended Consent Decree for Ohio Environmental Protection Agency (OEPA) concurrence. In addition, Section 5.0 of this plan is submitted to obtain Ohio Environmental Protection Agency approval.

3.0 SUMMARY OF AMENDED CONSENT DECREE COMMITMENTS FOR DRUM MANAGEMENT

Listed below are the commitments as stated in the Amended Consent Decree made by the FMPC relating to drum management during the evaluations:

Amended Consent Decree Reference	Commitment	Drum Management Plan Reference
Subsection 3.5.1 (f)	DOE shall, as soon as reasonably possible but in no event more than sixty (60) days from a determination that any drummed materials are hazardous or mixed waste, move such materials to units that are identified in the FMPC Part A Permit Application submitted September 1989, or subsequent revisions. If storage space which meets RCRA and Ohio hazardous waste storage requirements is not available, DOE shall store such wastes in a manner as protective of human health and the environment as possible, shall perform daily leakage inspections on all such containers that are not located under cover, and shall, within sixty (60) days of a determination that sufficient RCRA storage space is not available, submit a plan and	Section 7.0

Amended Consent Decree Reference	Commitment	Drum Management Plan Reference
Subsection 3.5.1 (f) (Continued)	schedule for OEPA approval for short-term storage of such wastes. DOE shall perform weekly inspection in accordance with 40 CFR 265.15 and 265.174, and OAC 3745-65-15 and 3745-66-74 on all such containers.	Section 7.0 (Continued)
Subsection 3.5.1 (f)	DOE shall store backlog material which is being evaluated for the potential to be hazardous or mixed waste, but for which such evaluations have not been completed, on the best available hard surfaced facilities at the FMPC in such a manner that any leakage can be readily detected, and no later than September 30, 1990, will maintain aisle space meeting the requirements of 40 CFR 265.35.	Section 4.1, 6.1
Section 3.8 (a)	On or before September 30, 1990, DOE shall ensure that sufficient aisle space is maintained on the Plant 1 Pad to meet the requirements of 40 CFR 265.35, except on the covered staging area.	Section 4.1
Section 3.8 (b)	Until such time as the approximate 16,000 drums identified on Attachment 1 are removed from the Plant 1 Pad, or such drums are determined not to be hazardous or mixed waste, DOE shall perform daily leakage inspections on all such drums, and shall perform weekly inspections in accordance with 40 CFR 265.15 and 265.174, and OAC 3745-65-15 and 3745-66-74.	Section 4.2

Amended Consent Decree Reference	Commitment	Drum Management Plan Reference
Section 3.8 (c)	Until such time as all containers evaluated under paragraph 3.5.1 above and all other containers of hazardous or mixed wastes are removed from the Plant 1 Pad, DOE shall maintain containment measures at the overpack covered staging area, such as the use of temporary dikes or liners, sufficient to ensure that any potential spillage or releases of material from drums are contained on the covered staging area of the pad and are not released into any drains, soil, storm sewers, or other areas outside of the covered staging area.	Section 5.0
Section 3.8 (c)	For any drums that are actually leaking in such a manner as to allow wastes to be released onto the pad DOE shall immediately contain the release or spill and shall manage the drum in accordance with OAC 3745-66-71 as soon as possible after detection, but in no event more than 24 hours after discovery.	Section 8.0
Section 3.8 (c)	Within thirty (30) days after entry of this Amendment, DOE shall submit to OEPA for its approval a plan describing the actions DOE will perform in order to comply with this subsection.	Sections 4.1, 4.2. 5.0, 8.0

4.0 PHYSICAL DESCRIPTION OF PLANT 1 PAD AREA AND ACTIVITIES

The Plant 1 Pad is a 375,000 square foot concrete storage area that is being used to store low level radioactive wastes, recoverable residues, and waste residues under Resource Conservation and Recovery Act (RCRA) evaluation. A sketch of the Plant 1 Pad, which is located in the northwest section of the FMPC production area is shown in Figure 4.0. The Containment Staging Area is located underneath the Building 1B weather shelter as noted on Figure 4.0.

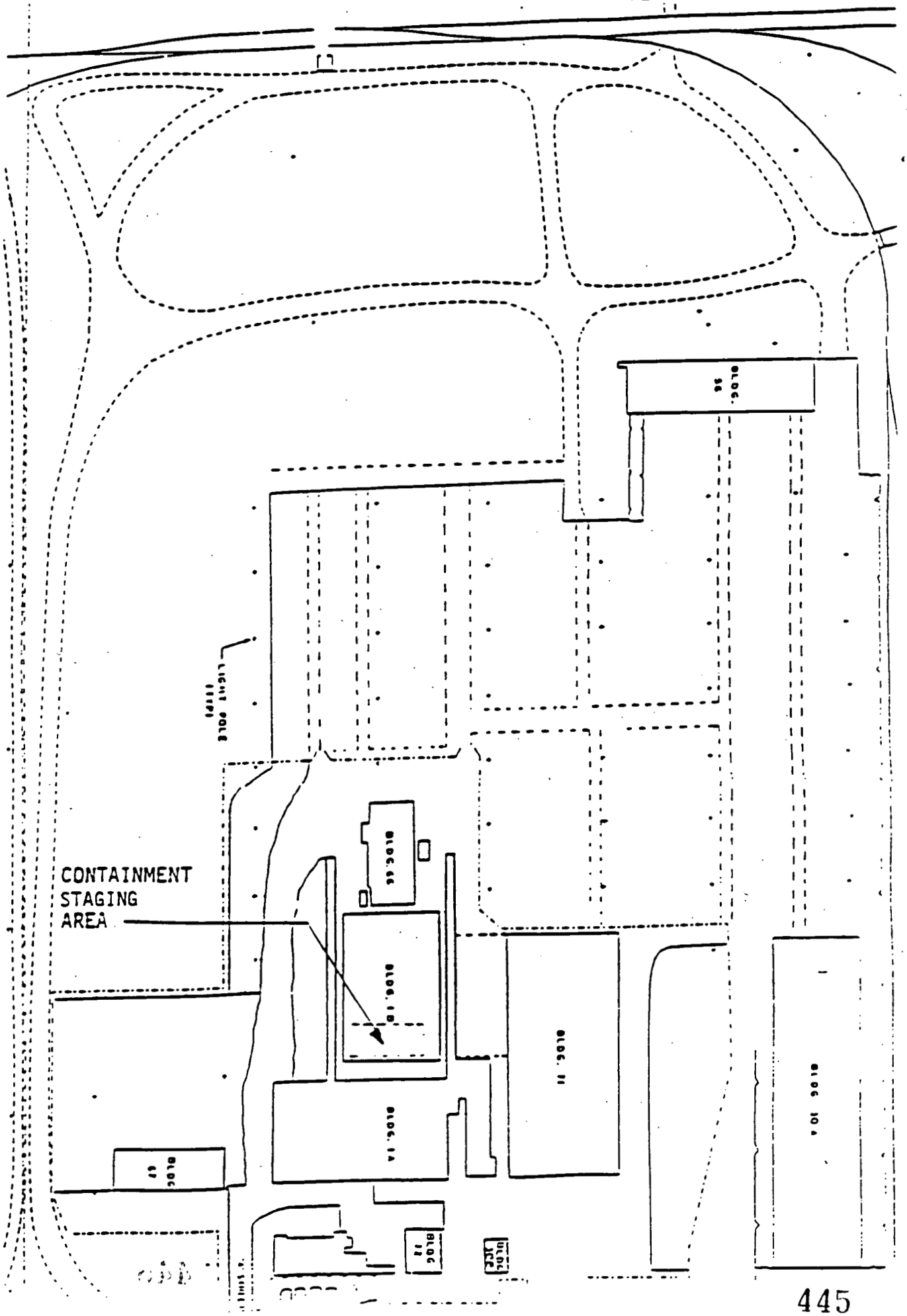
Due to the deteriorated condition and environmental exposure of the approximately 45,000 drums stored on the pad, aggressive operational actions have been implemented to prevent spills/leaks from the drums. These actions include the following:

- Overpacking of deteriorated drums on the Plant 1 Pad.
- Daily drum leakage inspections.
- Weekly inspection consistent with 40 CFR 265.15 and 265.174 and OAC 3745-65-15 and 3745-66-74 by August 31, 1990.
- Operation of a lined staging area for deteriorated drums prior to overpacking.
- Relocation of 20,000 drums from the Plant 1 Pad to indoor storage within the FMPC production facilities by October 31, 1990.
- Rearrangement of remaining Plant 1 Pad drums to provide adequate aisle spacing for leakage inspections by September 30, 1990.
- Emergency repair of pad deterioration that would permit safe movement of the drums to achieve adequate aisle spacing. The repair consists of filling in deteriorated sections of the pad and cutting away severely cracked areas with subsequent replacement of the needed concrete. The emergency repair is being conducted in concert with the drum movements so that the September 30, 1990, date to achieve adequate aisle spacing is met. Controls are in place during the repair to minimize the spread of contamination and to drum the waste for subsequent evaluation.
- Special relocation of approximately 4,700 drums to the Plant 1 Pad containing uranium bearing materials that will require further action to alleviate a potential explosive hazard due to the possibility of hydrogen generation and ignition. A method for safe transport of the drums has been documented to allow development of the best method to mitigate the potential explosive hazard after the pad aisle spacing is achieved on September 30, 1990.

All of the above actions, as detailed in the remaining plan sections, are consistent with the Amended Consent Decree commitments and will result in a substantial environmental improvement at the FMPC.

FIGURE 4.0
PLANT 1 PAD AREA

3511



4.1 AISLE SPACING

The aisle spacing that will be implemented by September 30, 1990, for the Plant 1 Pad (not including drums in the Containment Staging Area) and other outdoor drum storage areas is shown in Figure 4.1. The inspection aisles will be maintained at a minimum of 24 inches between each row of pallets. Fifty (50) inch fork truck access is provided on at least one side of the storage locations and when possible, on two sides. The maximum number of skids in any one row is 20. The exception is for the northeast ramp area of the Plant 1 Pad which has three rows that are 41 skids long due to the dimensions of the ramp area and the intent to maximize utilization of storage space on the pad. This storage arrangement was designed to maximize utilization of the hard surfaces found on the Plant 1 Pad Area and other outdoor storage locations; provide adequate aisle space for inspections; and allow sufficient room for immediate action to contain leaks/spills and allow a drum to be mitigated within 24 hours. This storage arrangement meets the requirements of 40 CFR 265.35.

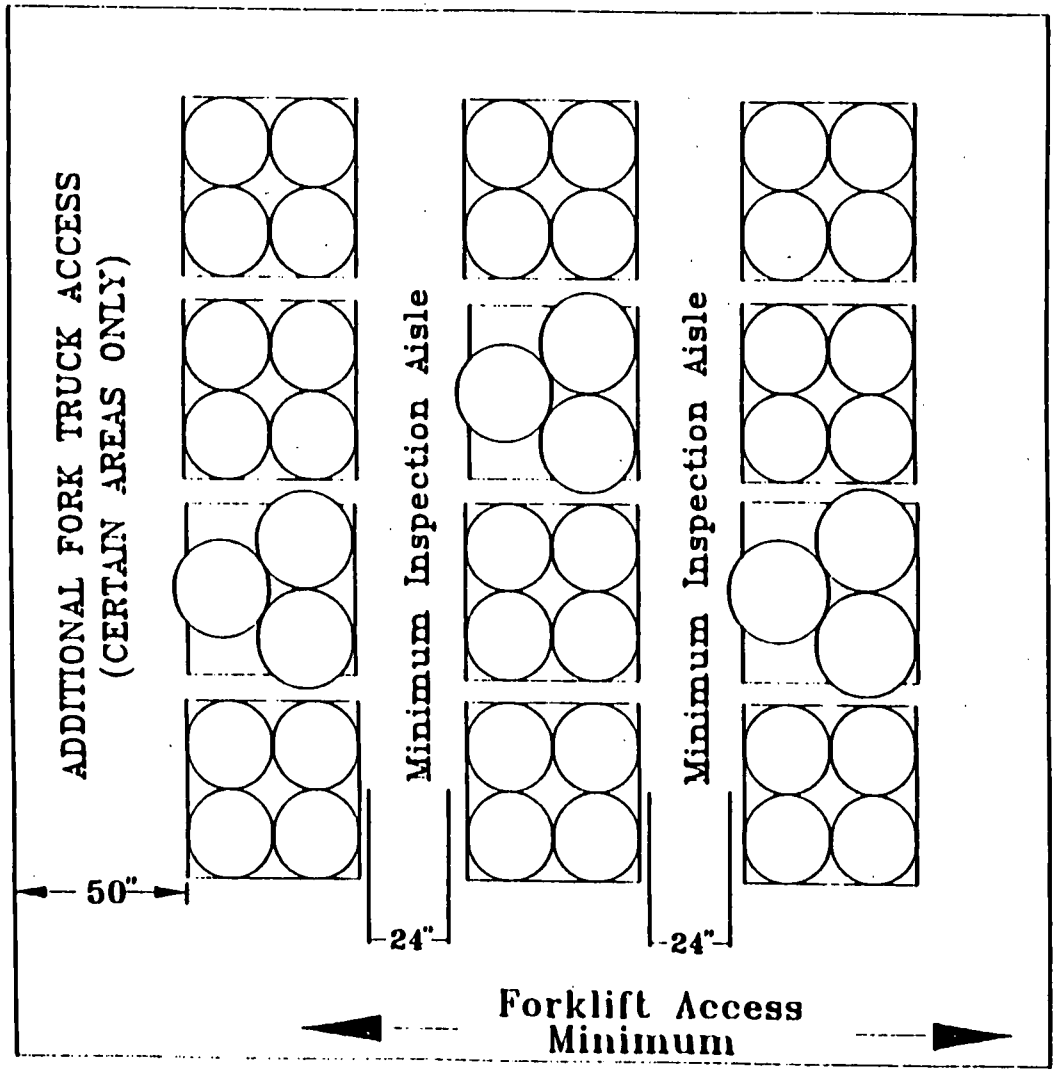
4.2 INSPECTIONS

Figure 4.2.0 is an example of a Plant 1 Pad daily leakage inspection sheet. The "RI" and "R" Areas marked at the top of the row columns in Figure 4.2.0 are examples of designated areas on the Plant 1 Pad for drum storage. Until September 30, 1990, the outdoor daily leakage inspections are performed to the extent that current aisle space allows due to the fact that not all of the drums stored outdoors have adequate aisle space. After September 30, 1990, the FMPC has committed to provide adequate aisles for all drums under evaluation. Ladders will be utilized during the daily leakage inspections to enhance observation of third tier drums. On this particular day, July 19, 1990, one drum was identified as leaking during the inspection contained in "R" Area, row number 4. Figure 4.2.1 is a comment page that is attached to an inspection sheet when a leaking drum is found and provides additional information on the drum, the corrective action, and the minor event report (MER) log number that the incident is recorded under.

Figures 4.2.2 and 4.2.3 illustrate the MER in which the documented corrective action states that the FMPC utility engineer, who is the on-shift assistant emergency duty officer (AEDO), was notified and the drum overpacked. The AEDO contacts the FMPC spill coordinator (as shown in Figure 4.2.4 under event number 90-07-261) to determine if a reportable quantity (RQ) was involved. In this case, an RQ was not spilled.

FIGURE 4.1

Plant 1 Pad/Outdoor Drum Storage



NOTE: MAXIMUM ROW LENGTH
IS 20 PALLETS

FIGURE 4.2.0

PLANT 1 EAST BAD DRUM INSPECTION

"RI" AREA		"R" AREA
ROW 1 OK	ROW 26 NON RCRA STORAGE	ROW 1 OK
ROW 2 OK	ROW 27 MT	ROW 2 OK
ROW 3 OK	ROW 28 MT	ROW 3 OK
ROW 4 OK	ROW 29 MT	ROW 4 Leaker ST/O S
ROW 5 OK	ROW 30 NON RCRA STORAGE	ROW 5 OK
ROW 6 OK	ROW 31 " " "	ROW 6 OK
ROW 7 OK	ROW 32 " " "	ROW 7 OK
ROW 8 OK	ROW 33 " " "	ROW 8 OK
ROW 9 OK		ROW 9 OK
ROW 10 OK		ROW 10 OK
ROW 11 OK		ROW 11 OK
ROW 12 OK		ROW 12 OK
ROW 13 OK		ROW 13 OK
ROW 14 OK		ROW 14 OK
ROW 15 OK		ROW 15 OK
ROW 16 OK		ROW 16 OK
ROW 17 OK		ROW 17 OK
ROW 18 OK		ROW 18 OK
ROW 19 OK		ROW 19 OK
ROW 20 OK		ROW 20 NON RCRA STO
ROW 21 MT		ROW 21 " "
ROW 22 MT		ROW 22 " "
ROW 23 MT		ROW 23 " "
ROW 24 MT		ROW 24 " "
ROW 25 MT		ROW 25 " "
		ROW 26 " "

INSPECTOR NAME: Richard L. Keaver

DATE: 7-19-90

TIME: 0936 AM

PLANT 1 PAD DRUM INSPECTION COMMENT PAGE

IST LOT AND DRUM NUMBER: H093-658-D069-0300 DR. 38

IST DRUM WEIGHTS: 471-48-423

IME SUPERVISOR OR U.E. NOTIFIED: A. ELAM 0900AM

CTIONS TAKEN AND TIMES: Drum plugged + overpacked 0945

ER REPORT NUMBER: 90-07-261

IST LOT AND DRUM NUMBER:

IST DRUM WEIGHTS:

IST TIME SUPERVISOR OR U.E. NOTIFIED:

CTIONS TAKEN AND TIMES:

ER REPORT NUMBER

IST LOT AND DRUM NUMBER:

IST DRUM WEIGHTS:

IME SUPERVISOR OR U.E. NOTIFIED:

TIONS TAKEN AND TIMES:

R REPORT NUMBER:

IST LOT AND DRUM NUMBER:

IST DRUM WEIGHTS:

IST TIME SUPERVISOR OR U.E. NOTIFIED:

TIONS TAKEN AND TIMES:

R REPORT NUMBER:

ST LOT AND DRUM NUMBER:

ST DRUM WEIGHTS:

ME SUPERVISOR OR U.E. NOTIFIED:

TIONS TAKEN AND TIMES:

FIGURE

Westinghouse Materials Company of Ohio
MINOR EVENT REPORT

EVENT LOG NO.: 90-07-26
DEPARTMENT REPORT NO.: MER:R:(WM):90-
PAGE: 1 of

UOR EVALUATION: This MER was reviewed for UOR criteria in accordance with Site Procedure FMPC-703.
UOR is required: ☒ NO ☐ YES UOR NUMBER:

STAFF MANAGER: J P Hogan
DATE: 7/20/90

NO.	DISTRIBUTION OF C
1	Staff Manager (ORIGINAL)
2	Vice President, Quality & Safety
3	Performance Assessment Department Ma
4	Section Manager
5	Area Supervisor/Group Manager
6	Central Files
7	Assistant Emergency Duty Officer/Utility

This report is to be completed in accordance with Site Procedure FMPC-704 during the shift which the event took place. Notify the Manager, Environmental Compliance immediately if the event represents a threat to the environment, on or off site.

ACTUAL EVENT

EVENT SUBJECT: LEAKING DRUM

1. DATE OF EVENT:	2. TIME:	4. SHIFT:
7-19-90	0930	1
5. LOCATION:	**6. RESPONSIBLE DEPARTMENT:**	**7. SECTION:**
PLANT 1 EAST PAD	WASTE OPERATIONS	W/O

EQUIPMENT/PROCESS/AREA: PLANT 1 EAST PAD.

DESCRIBE THE EVENT IN DETAIL:
☐ See attached sheets (if required).

DURING ROUTINE EAST PAD INSPECTION A DRUM HO93-658-D669-0300 DRUM 38 WAS FOUND LEAKING. APPROX 2 OZ LEAKED OUT.

CORRECTIVE ACTION TAKEN:
See attached sheets (if required).

THE LEAK WAS CONTAINED WITH ABSORBENT PADS
H.E WAS NOTIFIED.
THE DRUM WAS TAKEN TO A OVERPACK STATION
& OVERPACKED. NO LIQUIDS LEAKED ONTO THE FL

AS THIS EVENT OCCURED PREVIOUSLY?
☐ NO
☒ YES WHEN? 7/15/90
WHERE? PLANT 1 PAD

12. WAS EVACUATION ALARM SOUNDED?
☒ NO
☐ YES WHEN?

AS BUILDING/AREA EVACUATED?
☒ NO
☐ YES WHEN?

14. WHEN WAS THE BUILDING/AREA REENTERED?

AUTHORIZED BY:

PERSONNEL INVOLVED/ WITNESSES:	NAME	BADGE	TITLE	DEPARTMENT	SENT TO M YES OR
See attached sheets for additional information.	R KOSTER	2571	CHEM OPR.	W/O	N

ADDITIONAL INFORMATION:
See attached sheets (if required).

NAME OF INDIVIDUAL FILING REPORT, TITLE, AND DATE:

EVENT LOG NUMBER (YR - MO - NO)	TIME AND DATE	DESCRIPTION	AEDO'S BADGE NUMBER	HE	LE	TRAINED SPILL ADVISOR	DIR A MON
90-07-261	0930 7-19-90	PLT. 1 PERSONNEL FOUND LEAKING DRUM ON PLT 1 PRD DURING ROUTINE INSPECTION - APPROX 2 OZ DRUM WAS OVERPACKED - LOT # H093-658-0069-0308 DR # 38	DW 116		✓	✓	
~~90-07-258~~	~~7-19-90~~ 1100						
90-07-258	1100 7-19-90	THE PROBLEMS WITH THE OFFSITE EMERG. WARNING SYSTEM AT BOSS FIRE HOUSE AND NEW BALTIMORE HAS BEEN CORRECTED - CONFIRMED AT 1100 HRS ON 7-19-90	DW 116		CLOSE OUT OF EVENT	NA	
90-07-262	1230 7-19-90	EMPLOYEE FOR CLEVELAND WRECKING CO. (BOB VALINES # 50-1887) RECEIVED LACERATIONS ON RIGHT THUMB WHILE WORKING AT LAB, WAS TRANSPORTED TO FRANCISCAN MEDICAL CENTER AT HARRISON IN PRIVATE VEHICLE - NOT REPORTABLE TO ORDC - PER HRASEN	DW 116	✓		NA	

452

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* EOC TO MAKE DISTRIBUTION: 1. EDOs (9) 2. DOE Site Office 3. Manager Public Affairs and Communications 4. Manager Environmental Compliance 8. Facility Owner GRUNSK

The following criteria was developed to prioritize mitigation activities such that the most deteriorated drums are addressed first. This criteria will be implemented during the daily leakage inspections by August 31, 1990:

TYPE I - Obvious observation of material flowing or having accumulated on pallet or pad.

- Notify supervisor.
- Immediately stop or contain the leak.
- Supervisor notifies AEDO.
- Note drum on inspection form as requiring mitigation within 24 hours.
- Complete additional cleanup as necessary.
- Supervisor generates a MER.
- AEDO notifies FMPC spill coordinator.

TYPE II - Localized evidence of material on exterior of drum but no material contact with pallet or pad.

- Note on inspection form.
- Supervisor generates a MER.
- Supervisor reviews completed inspection sheets to prioritized drum for movement to Overpack Staging Area and subsequent mitigation.

TYPE III - Evidence of exterior contamination/discoloration without evidence of active release.

- Note on inspection form.
- Supervisor to schedule for overpacking when Type I and II drums are all overpacked.
- Supervisor generates a MER.

Appendix I contains example photographs of Type I, II, and III drums.

Table 4.2.1 illustrates the frequency of inspections for drums that are under evaluation with respect to the FMPC storage location.

TABLE 4.2.1
FMPC DRUM INSPECTION FREQUENCY*

TYPE OF INSPECTION	PLANT 1 PAD	ALL OTHER OUT-DOOR DRUM STORAGE AREAS	INDOOR PLANT	RCRA WAREHOUSES
Daily Leakage	X	X		
Weekly Leakage			X	
Weekly RCRA	X			X

*DOES NOT INCLUDE INTERMEDIATE PRODUCTS/PRODUCTS OR THORIUM

In addition to the daily leakage inspections performed on the Plant 1 Pad, weekly RCRA inspections will be performed as of August 30, 1990, to meet the requirements of 40 CFR 265.15 and 265.174 and OAC 3745-65-15 and 3745-66-74. The criteria used for the weekly Plant 1 Pad inspections is shown in Table 4.2.2.

TABLE 4.2.2
WEEKLY INSPECTION CRITERIA FOR PLANT 1 PAD*

1. Communications Device (Supervisors Office)
2. Spill Response Equipment (on Pad)
   - 2.A. Recovery drums (10)
   - 2.B. Absorbent Pad (6)
   - 2.C. Hazardous Material Pig (6)
   - 2.D. Leather Palm Gloves (3)
   - 2.E. Rubber Boots (3)
   - 2.F. Disposable Coveralls (3)
   - 2.G. Shovels (2)
   - 2.H. Brooms (1)
   - 2.I. Granular Absorbent (3 bags)
3. Respirators and Cartridges (3) (Building 66 and Plant 1)
4. Emergency Eyewash (outside Plant 1/Building 66)
5. Green Light for Eyewash Stations
6. Signs (pad perimeter)
   - 6.A. Authorized Personnel Signs
   - 6.B. No Smoking Signs
   - 6.C. Emergency Call
7. Fire Extinguisher (Outside Plant 1/Building 66/Building 71)
8. Containment Area
   - 8.A. Curb Condition
   - 8.B. Liner Condition
   - 8.C. Free Liquids
9. Security Maintained by FMPC Security System
10. Container Inspections-Reference Daily Leakage Inspection Forms.
11. Pad Inspection-Not applicable, Pad Integrity to be Addressed During Operational Improvement Project.

*This is the minimum inspection criteria and subject to revision.

The approximately "16,000" suspect drums as referenced in the Amended Consent Decree are located on the Plant 1 Pad, except for one material type representing approximately 5,539 drums located in Plant 6. The specific material stream, which is a sump cake that had previously been processed through the FMPC rotary kiln, was moved to Plant 6 because in February 1990, WMCO had concluded sampling/analysis of the material and evaluated it to be nonRCRA. Since the criteria for moving drums into the Plant 6 "dense pack" storage array (as outlined in Section 6.0) is that the material be dry as determined by process knowledge and unlikely to be evaluated RCRA, the dried sump cake stream was one of the materials selected for Plant 6 storage. The movement of the dried sump cake stream was initiated the week of June 18, 1990, and completed the week of July 16, 1990. The drum material contained in Plant 6, including the dried sump cake, has a weekly leakage inspection performed as shown in Table 4.2.1 which is sufficient based on the material type, drum conditions, and enhanced storage area location.

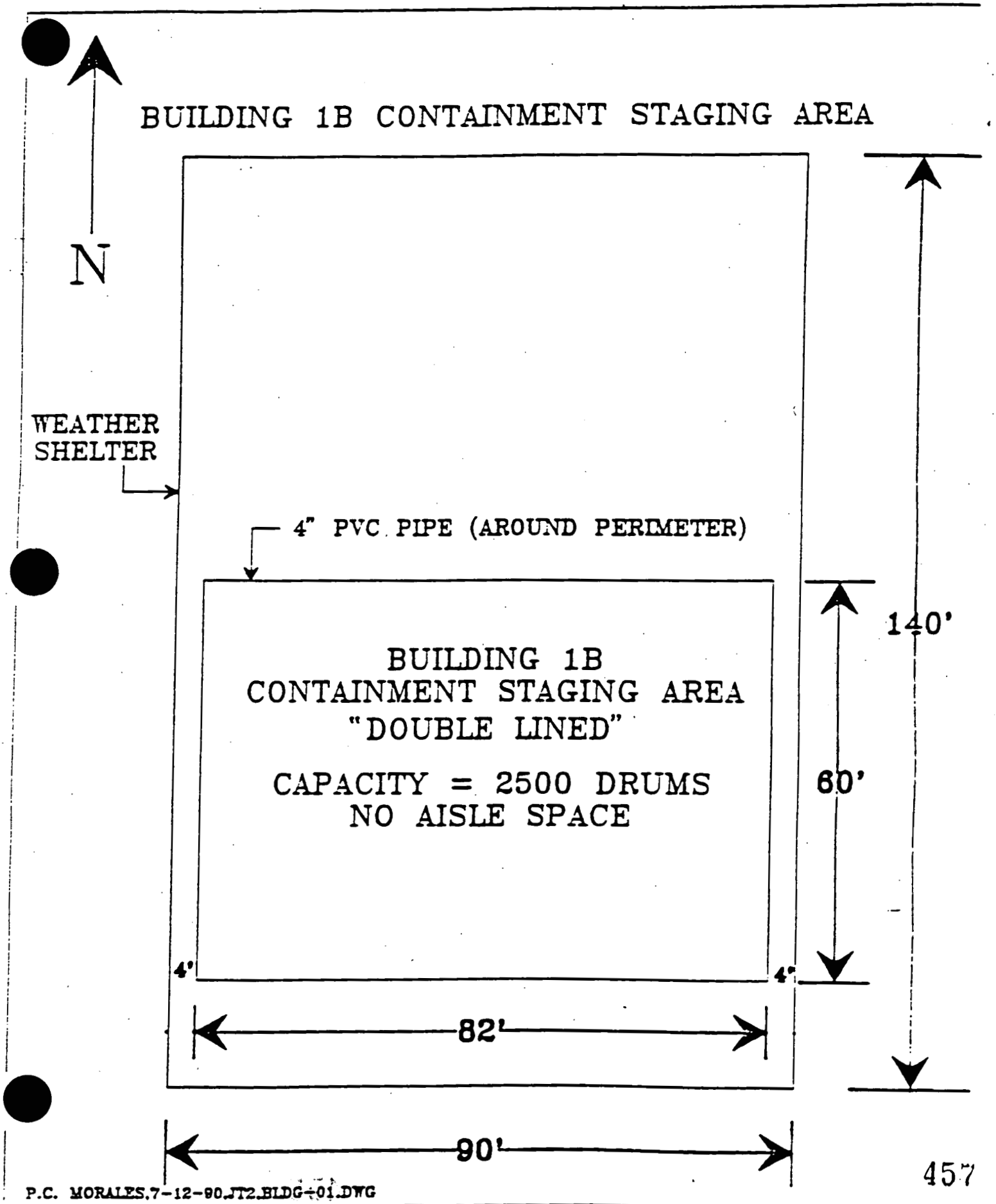
5.0 PLANT 1 PAD CONTAINMENT STAGING AREA OPERATION

The Plant 1 Pad Containment Staging Area is approximately 4,920 square foot area constructed of a layer of impermeable, vinyl-nylon plastic surrounded by 4 inch plastic pipe. The area is covered by a metal roof structure which is open on the sides. The capacity of the Containment Staging Area is approximately 2,000 drums without aisle spacing. Figure 5.0 contains a sketch of the Containment Staging Area.

The Plant 1 Pad Containment Staging Area is used to store deteriorated drums that require overpacking. Drums are overpacked for one of two reasons: (1) to correct a leak (Type I drums) or (2) to improve the integrity of the container due to a general or local deterioration so as to preclude future leaks (Type II/III drums).

As space permits, Type II/III drums are transported by fork truck from the Plant 1 Pad Area to the Containment Staging Area. From the Containment Staging Area, the drums are scheduled for overpacking at one of three locations (two inside Plant 1 and one inside Building 71 located on the pad). Additional overpacking areas may be set up on the Plant 1 Pad or alternate locations depending on the overpacking requirements. Figure 5.1 shows the number of drums overpacked to date during FY-1990.

When a Type I drum is identified, immediate action is taken to contain the drum/material using a patch, absorbent materials, or other appropriate methods. Once contained and direction has been given by the AEDO, as detailed in Section 8.0, the drum is transported to an overpacking area and mitigated within 24 hours after the drum was identified.



P.C. MORALES.7-12-90.JT2.BLDG-01.DWG

R FIGURE 5.1

WASTE MANAGEMENT PERFORMANCE MEASURE

1990 GOAL

OVERPACK 10,000 DRUMS ON THE PLANT 1 PAD

STATUS: OVERPACKED 13,151 FOR FY 1990

1991 GOAL

OVERPACK 18,000 DETERIORATED DRUMS IN OPERATIONS FACILITIES

STATUS: OVERPACKED 13,437 FY 1991 TO DATE

	Monthly Accumulation	Year-To-Date
October	2,315	2,315
November	1,891	4,206
December	1,538	5,744
January	2,494	8,238
February	3,009	11,247
March	2,109	13,437

6.0 INDOOR DRUM STORAGE

6.1 Scope

The scope of the indoor drum storage activity involves relocating drums from outdoor storage locations to the inside areas of idle production plants. In some plants, machinery/equipment is being moved to make available the maximum amount of floor space to accommodate drums. The goal is to relocate 20,000 drums of residues into indoor storage by October 31, 1990. The movement and storage of drum residues inside FMPC facilities on lined and contained surfaces represents a significant environmental enhancement until evaluation, treatment/disposal of the residues is completed.

6.2 Criteria for Drum Movement

The criteria for selecting which materials are moved into indoor storage primarily depends on two factors. The first factor concerns the relative certainty that the material will be evaluated to be nonRCRA. Process knowledge combined with past analytical data indicates that certain process residues, such as the dried sump cake discussed in Section 4.2 or magnesium fluoride have a very unlikely probability of being evaluated hazardous. The final determination of many of the residues, however, cannot be finalized until the identification of all FMPC hazardous waste management units is complete in June 1991. Therefore, the FMPC will not knowingly create new hazardous waste storage units by relocating residues under evaluation that have a potential to be later determined hazardous. The second criteria is the use of process knowledge to verify the material contains no free liquids. The reason for this criteria is that in order to relocate as many drums indoors to reduce environmental deterioration of the drums, the FMPC is utilizing a "dense pack" arrangement as described in Section 6.3. The determination by process knowledge of a dry material allows the "dense pack" of the drums, yet still provides adequate room for inspection and spill response activities based on the relative immobility of the stored material.

R 6.3 Aisle Spacing

Figure 6.3 illustrates the "dense pack" arrangement for storage of dry materials (as determined by process knowledge) in FMPC Plant 6. All drums stored indoors are placed on an impermeable laminated vinyl/nylon and surrounded completely by 4 inch curbing to form a containment in the storage areas. This current storage arrangement in Plant 6 will not be used for storage of other waste subject to the decree or the hazardous waste rules. If any of the drummed material in Plant 6 is determined to be hazardous waste, the waste will be handled and stored consistent with the requirements of the Amended Consent Decree. Storage in other locations for drums under evaluation which contain hazardous waste must be conducted consistent with the arrangements specified for the Plant 1 Pad or the arrangements currently in use in the FMPC permitted storage areas. The latter storage arrangement meets the requirements of 40 CFR 265.35.

6.3 Aisle Spacing (Continued)

The inspection aisles are currently 22 inches between each two rows of pallets with a 50 inch fork truck access provided on at least one side of the storage locations and when possible on two sides. The 22 inch aisle spacing was based upon leakage inspection capability, spill response actions, and maximizing the number of drums stored indoors.

6.4 Drum Inspections

The inspection criteria for indoor drum storage is the same as described for outdoor drum storage in Section 4.2. The three levels of drum deterioration are applicable with the requirement of immediate spill response actions for Type I drums. The leakage inspections for indoor drum storage are conducted on a weekly basis as indicated in Table 4.2.1.

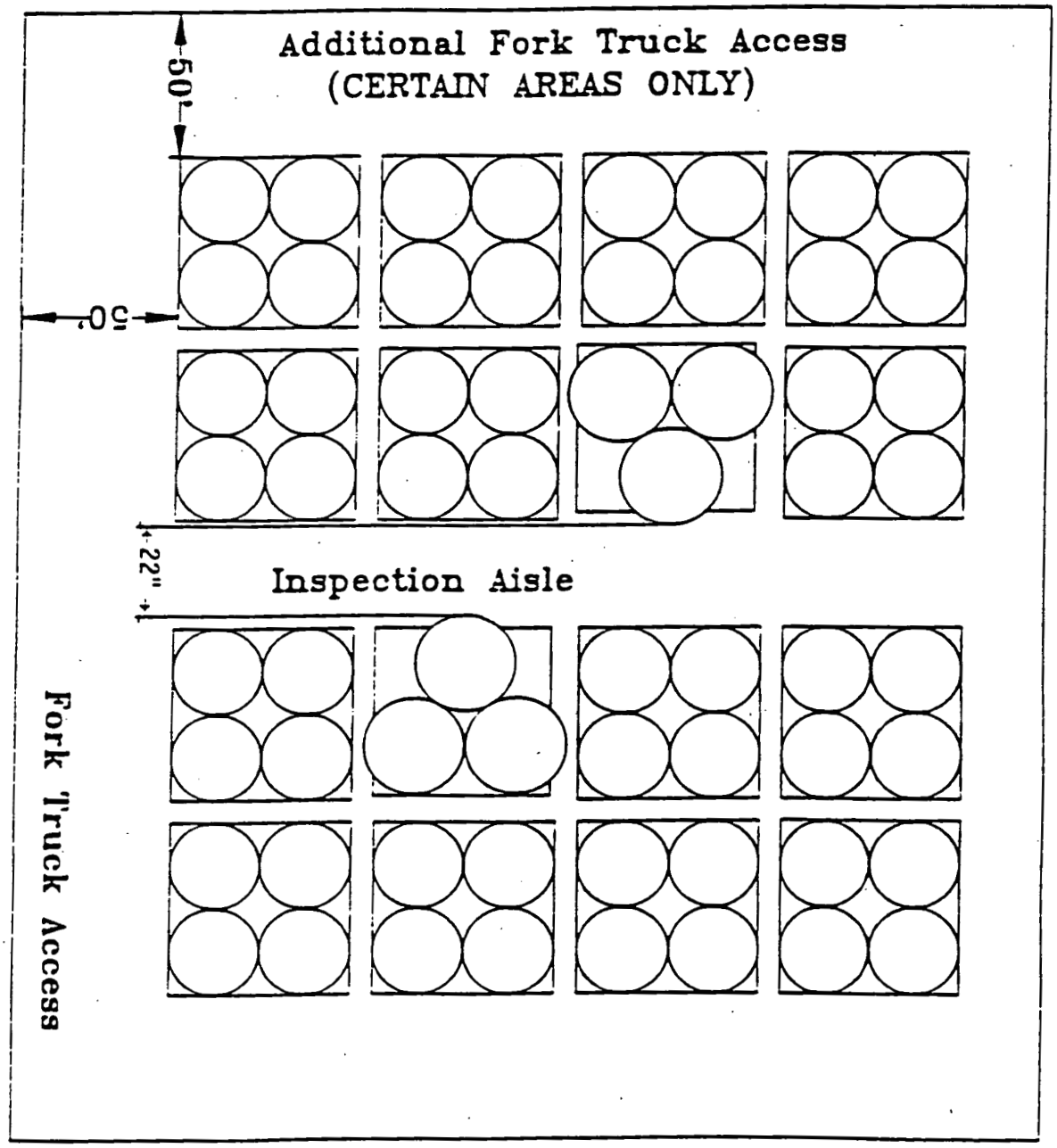
To enhance the inspection process inside plants where the lighting is not as bright during the daytime hours as in outdoor storage areas and the dense pack array requires more extensive examination, high intensity flashlights and rolling ladders are utilized. Each operator inspecting drums indoors is required to use a high intensity flashlight to shine between the double stack of pallets to perform the inspection. In addition, a rolling ladder is used to gain greater visibility to drums located within the interior of the third stack.

7.0 MATERIAL STORAGE EVALUATION

Determination of hazardous waste is defined by the FMPC when notification is made to OEPA in the form of the quarterly technical progress reports. Sixty days (60) from a determination that any drummed materials are hazardous or mixed waste, DOE will move such materials to units that are identified in the FMPC Part A permit Application submitted September 1989, or subsequent revisions. If storage space is not available, DOE will perform daily leakage inspections on all such containers as outlined in Section 4.2 of this plan, and shall, within 60 days of a determination that sufficient RCRA storage space is not available, submit a plan and schedule for OEPA approval for short-term storage of such wastes. DOE will perform weekly inspections in accordance with 40 CFR 265.15 and 265.174 and OAC 3745-65-15 and 3745-66-74 on all such containers.

Indoor Drum Storage

(For Plant 6 Only)



NOTES: 1. MAXIMUM ROW LENGTH IS 20 PALLETS.

8.0 SPILL RESPONSE ACTIONS

Based upon the inspection criteria listed in Section 4.2.0, the FMPC spill response actions for Type I identified drums are as follows:

1. Operator inspects drum and makes an obvious observation of material flowing from the drum or an accumulation of material on pallet or pad.

2. Operator notifies supervisor.

3. Immediate actions are taken utilizing the spill response equipment as identified in Table 4.2.2. Typically absorbents are used on wet spills and dry spills are covered and vacuumed or scooped up. The immediate actions are taken to contain the spill without normally moving the drums. the aisle spacing as outlined for the various FMPC storage area is adequate to perform these actions based on past operating experience.

4. Supervisor notifies the AEDO.

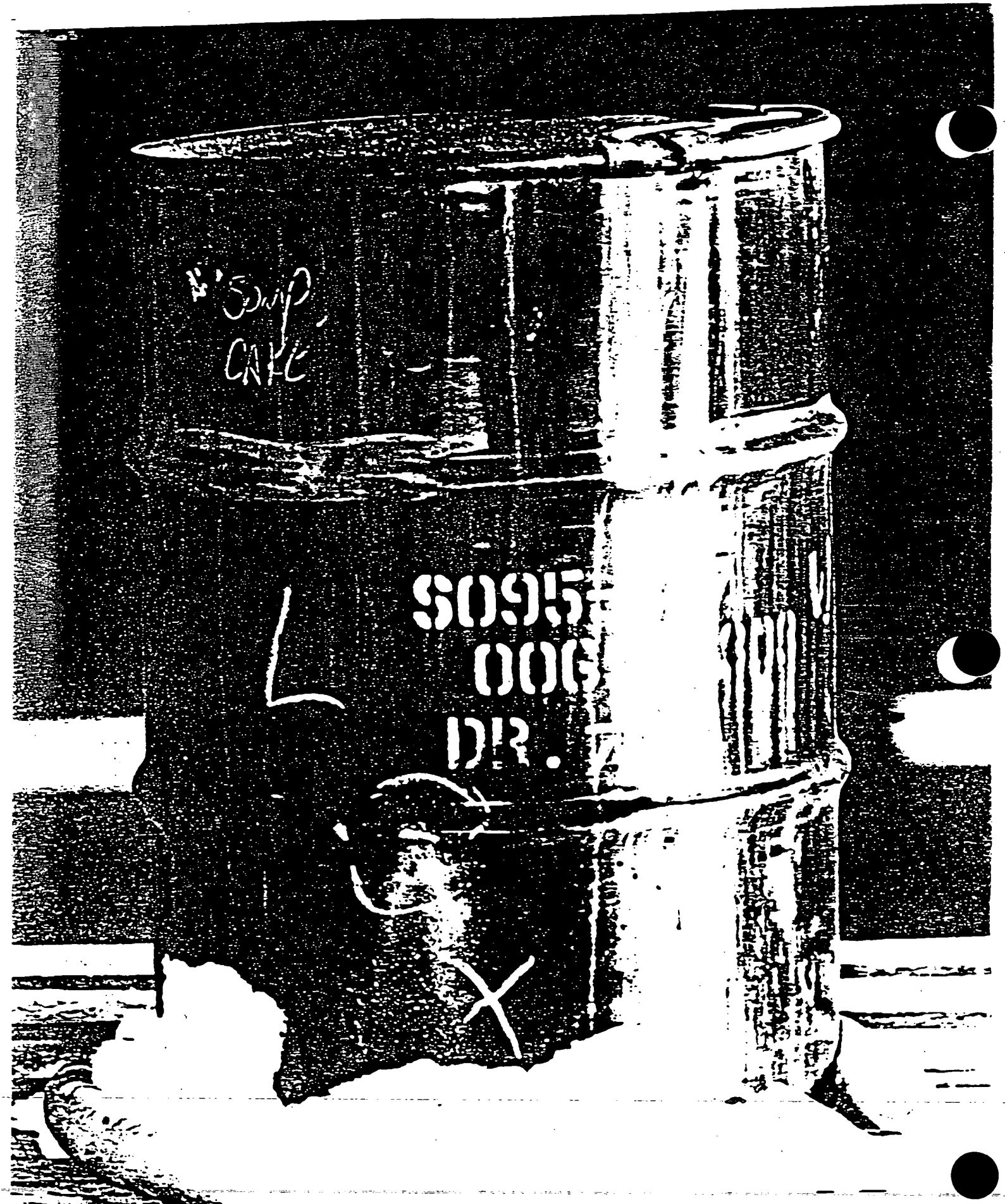
5. Notation is made on inspection form so that drum will be mitigated within 24 hours (for Type I drum only).

6. Supervisor generates a MER and AEDO notifies spill coordinator to determine if a RQ was spilled.

7. After the initial leak is contained or stopped, a fork truck is used to stage the pallets into the 50 inch fork truck aisle to retrieve the drum for overpacking and additional cleanup of the spill area if necessary.

APPENDIX I

DRUM TYPES


4" Sump
CAPC
L
S095
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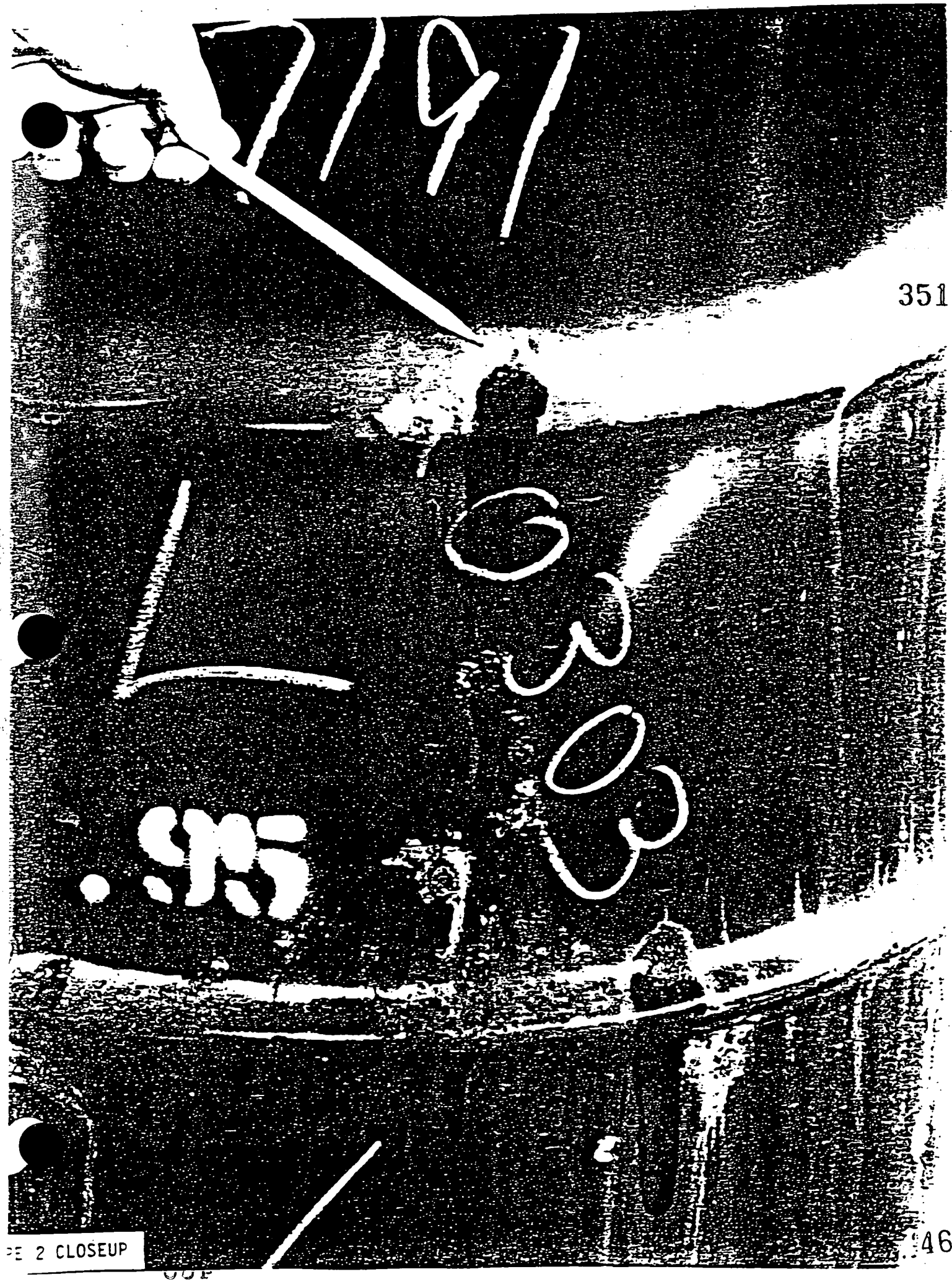
DR.

E : CLOSEUP

2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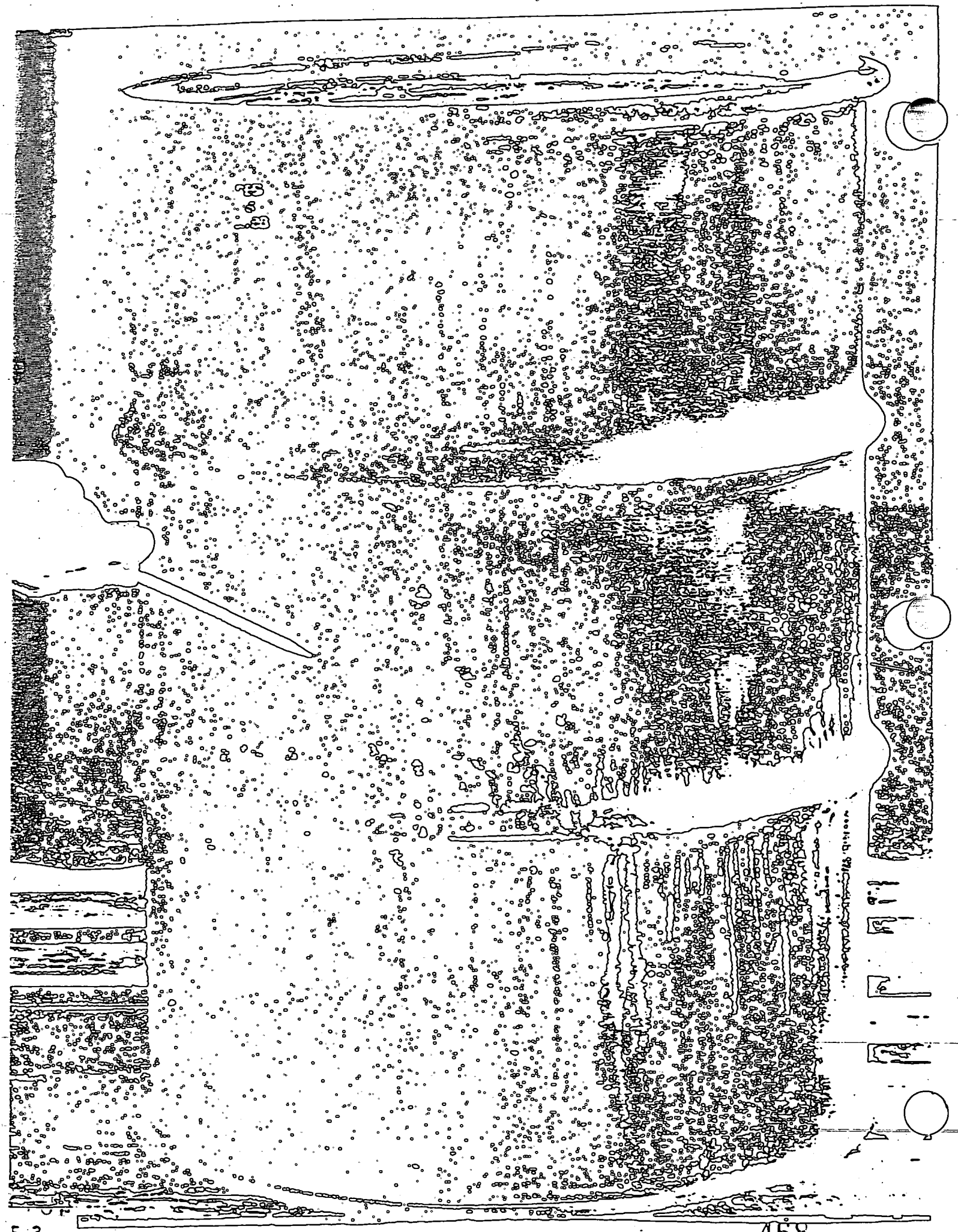
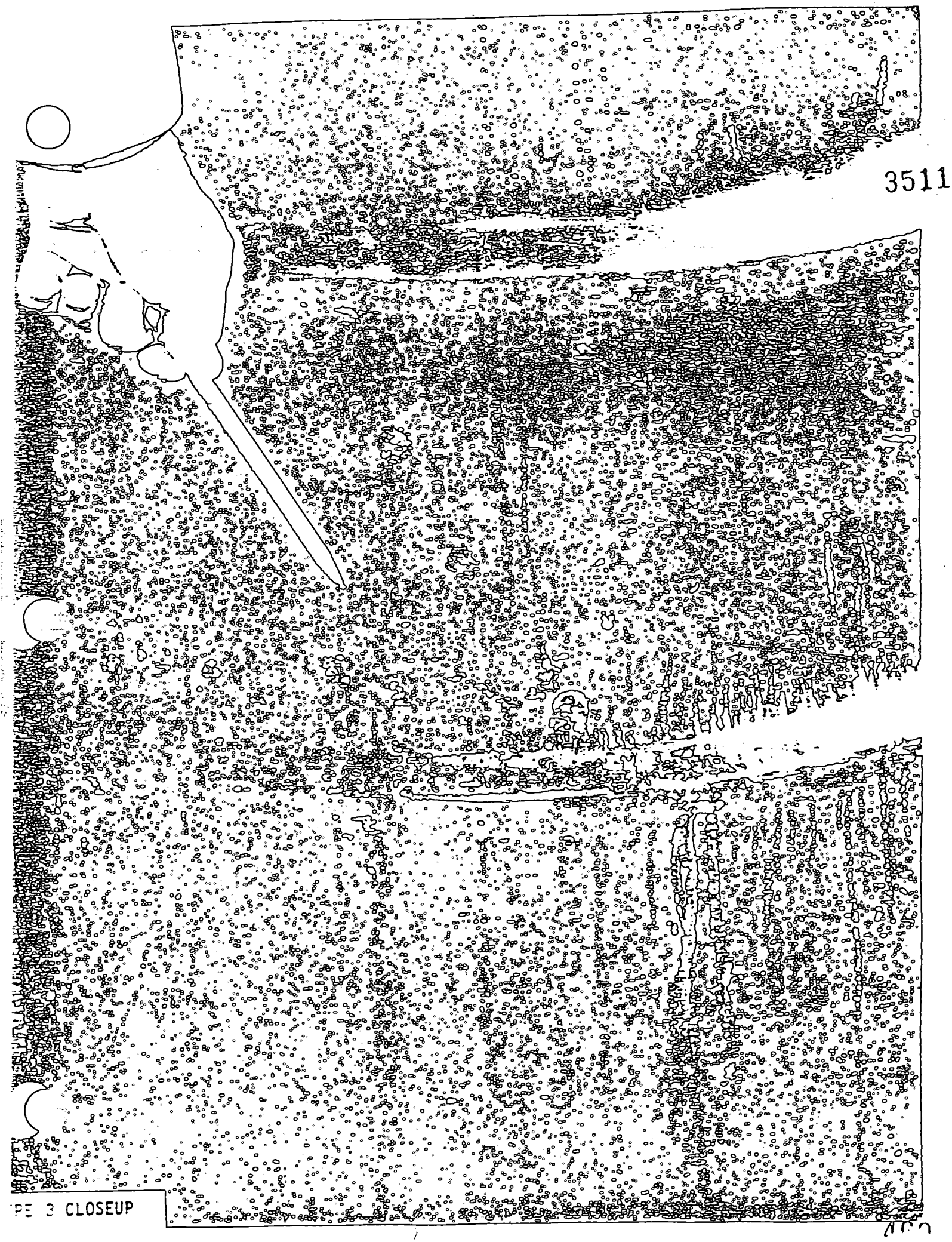
467




3511
PE 3 CLOSEUP

FMPC DRUM MANAGEMENT PLAN

ADDENDUM I

APRIL 1991

HYDROGEN GENERATING MATERIAL

The FMPC currently has materials containing uranium metal stored inside drums on site. When uranium combines with oxygen from any water present in the drums, hydrogen gas is formed.

FMPC has determined that some drums of RCRA and uncharacterized material have the potential to buildup hydrogen gas from this chemical reaction. In order to preclude any potential problems, FMPC plans to vent the drums to remove any hydrogen buildup that may have occurred. In addition, air filters will be added to the drum lids to exhaust any future hydrogen generated inside the drum.

The filter being added is a carbon-carbon composite high efficiency particulate air (HEPA) filter. The 3/4 inch carbon-carbon filter is 90% porous by volume, has a flow rate of 200 ml per minute at one inch of water, is resistant to radiation and acid damage, and which continues to function when exposed to moisture.

To simulate the overturning of a drum, FMPC tested the leaking of the proposed vents with one foot of head water. These vents had an average time of seven hours before leaking began. As is evidenced by this testing, FMPC believes enough time exists to respond to any overturned drum with minimal, if any release to the environment.

The filter will be inserted into the 3/4 inch bung opening of the new drum lid. The new lid will be placed on the drum and the drum will then be moved into storage. The use of this vent allows the drums to be managed safely with minimal risk to human health or the environment.

FMPC WESTINGHOUSE MATERIALS COMPANY OF OHIO OPERATIONS DOCUMENT PROGRAM	Page 1 of 18 Revision No. 0	3511
RESTORATION PROCEDURE	STORAGE OF RADIOACTIVE MATERIAL	SOP 1-C-608 AREA: Plant 1
Authorization: R. L. Gardner, Manufacturing	Supersedes: None	Issue Date: 08-13-90

1.0 PURPOSE

The purpose of this procedure is to provide the requirements for storing radioactive material.

2.0 APPLICABILITY

This procedure shall apply to designated Plant 1 radioactive material storage areas.

3.0 RESPONSIBILITIES

3.1 Supervisors shall be responsible for the following:

3.1.1 Coordinating and notifying support organizations of assistance as required per this procedure.

3.1.2 Specifying storage location for material in accordance with FMPC-2084, "Radiation Control Manual".

3.1.3 Ensuring only trained personnel handle radioactive material.

3.1.4 Distributing documentation as required per this SOP.

3.1.5 Performing required inspections of storage facilities.

3.1.6 Ensuring that AEDO is notified of any release to the environment and that a Minor Event Report (MER) is completed.

3.1.7 Ensuring authorized storage configurations, aisle spacing, material segregation and other storage requirements are maintained per this SOP.

3.1.8 Contacting Industrial Hygiene or Radiological Safety to determine the appropriate respiratory protection for the process being performed.

3.1.9 Providing operators with the required respiratory protection.

3.1.10 Contacting Radiological Safety to perform a survey prior to storing the radioactive material.

3.2 Solid Waste Compliance shall be responsible for the following:

3.2.1 Performing surveillances of radioactive material storage areas according to regulatory requirements.

3.2.2 Assuring proper characterization and classification of FMPC waste streams.

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3.0 RESPONSIBILITIES (cont.)

3.2.3 Ensuring applicable regulation requirements are incorporated into this procedure and are being followed at the FMPC.

3.2.4 Performing surveillances of radioactive material storage area records to ensure adequacy and completeness.

3.3 Operators shall be responsible for complying with this SOP and notifying supervisor immediately of spills, leaks, releases or any unusual conditions.

3.4 Materials Control & Accountability shall be responsible for the following:

3.4.1 Maintaining current radioactive material inventory.

3.4.2 Preparing, maintaining and signing inventory and identification records per this SOP.

4.0 DEFINITIONS

4.1 Material Characterization - An evaluation which provides the physical and chemical characteristics and major radiological content and concentration of the material.

4.2 FMPC Lot Marking System - A 15 digit alpha numeric coding system used to identify nuclear material to ensure separation of depleted, normal, and enriched uranium or thorium materials.

4.3 Non-Characterized Material - Radioactive material that is suspected to have constituents on the Environmental Protection Agency Hazardous Waste List.

4.4 Resource Conservation & Recovery Act (RCRA) - The Congressional Act which established safe and environmentally acceptable management practices for specific wastes. RCRA requires strict "cradle to grave" control and proper management of all hazardous waste.

4.5 Short Term Material - Radioactive material stored only for a maximum of six months.

4.6 Radioactive Material - Material composed of radioactive or radioactively contaminated material in excess of safe limits for unconditional release.

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5.0 REFERENCES

5.1 SOP 20-C-902, "Liquid Propane Gas (LPG) Powered Handstackers and Tuggers"

5.2 SOP 1-C-101, "Sampling Residue and Waste Material"

5.3 SOP 1-C-804, "Overpacking Deteriorated Containers"

5.4 SOP 20-C-904, "General Nuclear Safety Requirements"

5.5 SOP 1-C-604, "Inspection of Containerized and Drummed Residues"

5.6 SOP-01-104, "Segregation of Wooden Pallets"

5.7 SOP 20-C-601, "Packaging Low Level Radioactive Waste (L-LRW) for Offsite Disposal"

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS

6.1 A defined safety system is not involved.

6.2 Respiratory protection provided by the supervisor shall be worn when required.

6.3 A HEPA type filter vacuum cleaner or a vacuum system approved by IH&S shall be used during spill cleanup with a current DOP test label properly affixed to vacuum.

6.4 Leather-palm gloves shall be worn when handling drums, operating equipment and when handling rough, sharp-edged or contaminated materials.

6.5 Any release of radioactive material outside of storage container shall be reported to the supervisor immediately.

6.6 Any circumstance which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake to Radiological Safety for evaluation. The involved employees shall report to Medical Services at the end of their shift or as directed to submit a urine sample and again report at the start of their next shift to submit another urine sample.

7.0 PROCEDURE

7.1 Preparing Containers for Storage

7.1.1 Upon delivery of radioactive material to the storage area, inspect container(s) and accompanying paperwork per the "Radioactive Material Pre-Storage Checklist", Form FMPC-REST-3183 (See Figure 1).

NOTE: An MC&A representative shall be notified for inventory update.

NOTE: An "NM Transfer Record/NM Receipt Record/Material Identification Record" (68/69 card) is not required for radioactive material received from offsite.

7.1.1.1 If an unacceptable item is noted, complete "Corrective Action" and "Date Corrected" section on the "Radioactive Material Pre-Storage Checklist".

NOTE: If container is acceptable, proceed to Step 7.1.2.

7.1.2 Sign the "NM Transfer Record/NM Receipt Record/Material Identification Record", 68/69 card (See Figure 2). Request the Waste Management Supervisor and the Nuclear Materials Reporting Specialist to sign 68/69 card.

7.1.2.1 If the container holds radioactive material received from offsite, complete the "Nuclear Material Receiving Report," Form FMPC-ADMS-613 (Figure 3) and the "Offsite Nuclear Materials Receipt Verification and Disposition Report", Form FMPC-ADMS-PRO-1131-1 (Figure 4) and transmit to supervisor.

NOTE: Supervisor shall forward Form FMPC-ADMS-613 to MC&A.

7.1.3 Paint bare metal, chipped paint areas, or rust areas using the same color of rust inhibiting paint.

CAUTION: RESPIRATORY PROTECTION SHALL BE WORN WHILE PERFORMING THIS STEP.

NOTE: Remove loose paint or rust with a metal brush before painting.

7.1.4 Request Nuclear Materials Reporting Specialist to record data for LLRM Inventory database.

7.1.5 Check to ensure hazardous material warning label (See Figure 5) affixed on container. If label(s) do not have coating, apply polyurethane coating.

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7.0 PROCEDURE (cont.)

7.1.6 Sign the completed "Radioactive Material Pre-Storage Checklist", Form FMPC-REST-3183 and obtain the other required signatures. Submit signed form to the supervisor.

7.1.7 Notify MC&A when container is moved form one location to another location.

7.2 Storage

7.2.1 Using forklift or handstacker, move radioactive material containers to storage per Table 1.

NOTE: Handstacker shall be inspected and operated per SOP 20-C-902.

7.2.1.1 If additional action is determined which is not listed on Table 1, notify supervisor.

7.3 Inspection

7.3.1 Inspect radioactive material containers on a periodic basis as determined by supervisor. Complete the "Radioactive Material Container/Storage Discrepancy Record", Form FMPC-REST-3182 (See Figure 6) during inspection by recording only the container/storage area discrepancies.

NOTE: Refer to Table 2 for inspection criteria.

7.3.1.1 If an unacceptable condition is noted on Form FMPC-REST-3182, refer to Tables 1 and 2 for corrective action.

7.3.1.2 If other items of concern are noted during inspection, notify supervisor for corrective action.

7.3.2 When inspection is completed, submit Form FMPC-REST-3182 to the supervisor.

NOTE: The inspector and supervisor shall sign the completed form.

NOTE: The supervisor shall maintain records of completed remediation.

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8.0 APPLICABLE FORMS

8.1 Form FMPC-REST-3182, "Radioactive Material Container/Storage Discrepancy Record"

8.2 Form FMPC-REST-3183, "Radioactive Material Container Pre-Storage Checklist"

8.3 Form FMPC-ADMS-613, "Nuclear Material Receiving Report"

8.4 Form FMPC-AC-1990, "NM Transfer Record"

8.5 Form FMPC-AC-2220, "Nuclear Material Receipt Record"

8.6 Form FMPC-AC-2221, "Material Identification Record"

8.7 Form FMPC-ADMS-PRO-1131-1, "Offsite Nuclear Materials Receipt Verification and Disposition Report"

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TABLE 1
STORAGE REQUIREMENTS FOR RADIOACTIVE MATERIAL

STORAGE REQUIREMENT	APPLICABLE RADIOACTIVE MATERIAL			
	CONTAINERIZED		NON-CHARAC-TERIZED WASTE	NON-CONTAINERIZED FREE-RELEASE MATERIAL
	LONG TERM	SHORT TERM		
1 Stack maximum of three containers high	X	X	X	
2 Group containers per lot number	X	X	X	X
3 Maintain forklift accessibility to rows	X	X	X	X
4 Spacing must be facility dependent	X	X	X	X
5 Store drummed material on pallets	X	X	X	
6 Container markings and labels shall be visible in aisle	X	X	X	
7 Aisles shall be accessible for inspection	X	X	X	
8 May be stored on or off pad				X
9 Nuclear safety requirements apply per SOP 20-C-904	X	X	X	

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TABLE 2
RADIOACTIVE MATERIAL STORAGE INSPECTION

ITEM	INSPECTION ITEM	INSPECTION CRITERIA	CORRECTIVE ACTION REQUIRED
Container	Hole	An opening in the container including breach, gouge, puncture or leak.	Overpack per SOP 1-C-804.
Container	Dent	A crease, depression or hollow made by blow or pressure; a concave distortion which jeopardizes the integrity of the container. A dent in the top or bottom rim.	Overpack per SOP 1-C-804.
Container	Bulge	A swollen area, a convex distortion, an outward bend which jeopardizes the integrity of the container.	Overpack per SOP 1-C-804.
Container	Corrosion	A container exhibiting exterior rust which is flaking or discoloration and bulging from interior rust.	Overpack per SOP 1-C-804.
Configu-ration	Spacing	Aisle spacing must be three feet between pallets and between rows of pallets for non-characterized material. All other material must be spaced per supervisor's direction.(1)	Move container(s).
Pallet	Boards	Inspect for broken boards per criteria of SOP 01-104.	Replace or repair pallet.
Container	Labeling	A hazardous material label, FMPC lot marking code, and gross weight must be visible and legible on the container.(2)	Affix label or stencil with enamel paint the required markings in 2 inch letters.

(1) Excluding requirements for nuclear safe masses per SOP 20-C-904.

(2) Enriched material shall include labeling requirements of SOP 20-C-904.

RADIOACTIVE MATERIAL CONTAINER PRE-STORAGE CHECKLIST

STORAGE AREA: FMPC INVENTORY NO.: DATE:

ITEM NO.	INSPECTION ITEM	ACCEPTABLE YES	ACCEPTABLE NO	CORRECTIVE ACTION	DATE CORRECTED
1	Form FMPC-CONT-1945-XX card complete			Complete form per SOP 20-C-601 or 1-C-604(1).	
2	68/69 card complete			Notify supervisor.	
3	Shipping manifest and waste characterization complete(2)			Notify supervisor.	
4	Container free of spilled/leaked material			Notify supervisor and contain spill/ leak per SOP 20-C-606	
5	Container free of damage (i.e. bare metal, hole, dent, bulge, corrosion)			Overpack per SOP 1-C-804.	
6	Container bolt ring secure			Secure or replace bolt ring.	
7	Material sampled/ factor assay performed for radionuclides and RCRA determination			Sample per SOP 1-C-101.	
8	FMPC Lot Number complete and stencil-led on container			Obtain and stencil lot number per SOP 20-C-601 or 1-C-604(1).	
9	Gross, net, and tare weight complete and stencilled on container			Stencil weights per SOP 20-C-601 or 1-C-604(1).	
10	"POOS" marking sten-cilled on container, if applicable			Stencil "POOS" marking on contain-er per SOP 20-C-601 or 1-C-604(1).	
11	Gross weight marking correct size (2")			Correct marking per SOP 20-C-601 or 1-C-604(1).	

RADIOACTIVE MATERIAL CONTAINER PRE-STORAGE CHECKLIST (SHEET 1 OF 2)
FORM NO. FMPC-REST-3183
Figure 1

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RADIOACTIVE MATERIAL CONTAINER PRE-STORAGE CHECKLIST (cont.)

STORAGE AREA: FMPC INVENTORY NO.: DATE:

ITEM NO.	INSPECTION ITEM	ACCEPTABLE YES	ACCEPTABLE NO	CORRECTIVE ACTION	DATE CORRECTED
12	Container markings and labels correctly located per Figure 7[3]			Correct per Figure 7 or Figure 8.	
13	"Hazardous Material Warning Label" affixed to container			Affix label to container.	
14	Other labels affixed to container as applicable (Flammable)			Affix applicable labels per SOP 20-C-601 or 1-C-604[1].	
15	Pallet free of damage			Replace or repair pallet per SOP-01-104.	
16	Container plastic wrapping secure, if applicable			Secure, rewrap, or containerize.	

(1) SOP 20-C-601 is applicable to radioactive waste. SOP 1-C-604 is applicable to residues and refuse material.
(2) Applicable to material received from offsite.
(3) Box markings and labels shall be located as shown in Figure 8.

COMMENTS: _____

MC&A Signature Badge No. Waste Management Signature Date

Inspector's Signature Date

RADIOACTIVE MATERIAL CONTAINER PRE-STORAGE CHECKLIST (SHEET 2 OF 2)
FORM NO. FMPC-REST-3183
Figure 1

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FMPC WESTINGHOUSE MATERIALS COMPANY OF OHIO OPERATIONS DOCUMENT PROGRAM	Page 11 of 18 Revision No. 0	
RESTORATION PROCEDURE	STORAGE OF RADIOACTIVE MATERIAL	SOP 1-C-608 AREA: Plant 1
Authorization: R. L. Gardner, Manufacturing	Supersedes: None	Issue Date: 08-13-90

NUCLEAR MATERIAL TRANSFER RECORD

CARD PL NO. 1 68

NEGATIVE	DATE TRANSFERRED MO.	DAY	YEAR	SHIFT	TRANS. BY BADGE NO.

NOTE: Green card is for receiver information ONLY and may be removed to file. DO NOT FORWARD to Data Processing. DO NOT LEAVE with the material.

CARD SEQUENCE NO.: 92852

P.O. NO.: | SOURCE: | MATERIAL CLASS: | MATERIAL TYPE: | LOT SEQUENCE NO.: | MATERIAL DESCRIPTION: | SHAPE CODE:

MBA: (FROM) | PLANT: | MBA: (TO) | PLANT: | STORAGE LOCATION:

NO. OF CONTAINERS OR ITEMS: NUMBER | DESCRIPTION | GROSS WEIGHT: | TARE WEIGHT:

SIGNATURES: (Shipper) (Transportation) (Receiver)

FMPC-AC-1990 (REV 10/7/88)

NUCLEAR MATERIAL RECEIPT RECORD

CARD PL NO. 1 69

NOTE: Green card is for receiver information ONLY and may be removed to file. DO NOT FORWARD to Data Processing. DO NOT LEAVE with the material.

NEGATIVE	DATE RECEIVED MO.	DAY	YEAR	SHIFT	RECEIVED BY BADGE NO.

CARD SEQUENCE NO.: 92852

P.O. NO.: | SOURCE: | MATERIAL CLASS: | MATERIAL TYPE: | LOT SEQUENCE NO.: | MATERIAL DESCRIPTION: | SHAPE CODE:

MBA: (FROM) | PLANT: | MBA: (TO) | PLANT: | STORAGE LOCATION:

NO. OF CONTAINERS OR ITEMS: NUMBER | DESCRIPTION | GROSS WEIGHT: | TARE WEIGHT:

SIGNATURES: (Shipper) (Transportation) (Receiver)

FMPC-AC-2220 (REV 10/7/88)

MATERIAL IDENTIFICATION RECORD

CARD PL NO. 1 XX

NOTE: Green card is for receiver information ONLY and may be removed to file. DO NOT FORWARD to Data Processing. DO NOT LEAVE with the material.

NEGATIVE	DATE RECEIVED MO.	DAY	YEAR	SHIFT	RECEIVED BY BADGE NO.

CARD SEQUENCE NO.: 92852

P.O. NO.: | SOURCE: | MATERIAL CLASS: | MATERIAL TYPE: | LOT SEQUENCE NO.: | MATERIAL DESCRIPTION: | SHAPE CODE:

MBA: (FROM) | PLANT | MBA: (TO) | PLANT | STORAGE LOCATION

NO. OF CONTAINERS OR ITEMS: NUMBER | DESCRIPTION | GROSS WEIGHT: | TARE WEIGHT

SIGNATURES: (Shipper) (Transportation) (Receiver)

FMPC-AC-2221 (REV 10/7/88)

NM TRANSFER RECORD/NM RECEIPT RECORD/MATERIAL IDENTIFICATION RECORD
FORMS FMPC-AC-1990, 2220, 2221
Figure 2

R - MATERIAL REVISED, ADDED, OR DELEED.

Westinghouse Materials Company of Ohio
P O BOX 398704
CINCINNATI, OHIO 45239

NUCLEAR MATERIAL RECEIVING REPORT

NUCLEAR MATERIAL RECEIVING REPORT NO _____

DATE UNLOADED _____ 19 ____ DATE RECEIVED _____ 19 ____

RECEIVED FROM _____

CARRIER _____ CAR NUMBER _____ SEAL NUMBER _____

FREIGHT BILL NO _____ BILL LADING NO _____

NUMBER OF ITEMS RECEIVED _____ TYPE OF ITEMS RECEIVED _____ GROSS WEIGHT _____

MATERIAL DESCRIPTION AS PER BILLING _____ NLT NO _____

CHECKED BY _____ RECEIVED BY _____

NOTE: The following must be completed by the person verifying receipt:

CONSIGNOR'S INFORMATION			DESCRIPTION OF MATERIAL	RECEIVING SECTION INFORMATION			
LOT NUMBER	QUANTITY	WEIGHT LBS		GROSS LBS	TARE LBS	NET LBS	ELEMENT WT

REMARKS (Related document numbers for additional material received) _____

RECEIVER TO MATERIALS CONTROL & ACCOUNTABILITY

NUCLEAR MATERIALS RECEIVING REPORT
FORM FMPC-ADMS-613
Figure 3

R - MATERIAL REVISED, ADDED, OR DELETED.

FMPC

Page ____ of ____ Pages

PRODUCTION OPERATIONS DEPARTMENT – RECEIVING GROUP (PLANT 1)

OFF-SITE NUCLEAR MATERIALS RECEIPT VERIFICATION AND DISPOSITION REPORT

Shipped From _____ Nuclear Mat'l Rec Report No _____ Date Disposed _____

_____ Date Received _____ DOE 741 No _____

Carrier _____ Shipper's Tally List Received with Shipment ☐ Yes

No. of containers on Nuclear Mat'l Receiving Report _____ WMT No. _____ ☐ No

LINE ITEM	PRODUCTION RECEIVING DATA						
	SHIPPER'S I.D NO.	NO OF CONTAINERS	MATERIAL DESCRIPTION	FMPC GROSS (LBS)	FMPC TARE (LBS)	FMPC NET (LBS)	SHIPPER'S NET WT. (LBS)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

DISPOSITION

LINE ITEMS INCLUDED	FMPC LOT NO ASSIGNED	DELIVERED TO (CONSIGNEE)

Condition Received (Remarks & Recommendations).

Disposition by _____

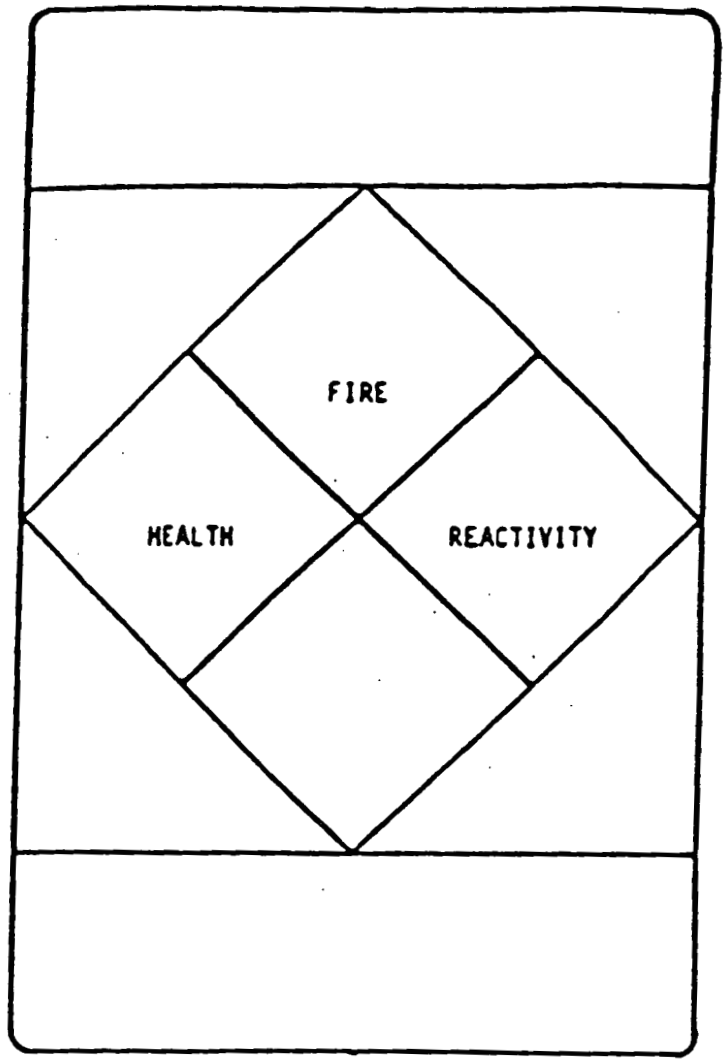
Persons Consulted in Reference to Disposition

NO	DISTRIBUTION OF COPIES
1	MC&A (RECORD COPY)
2	Receiving Group - Plant 1
3	Operations Scheduling & Planning
4	Production Records - Plant 1
5	Receiving Plant

FMPC-ADMS-PRO-1131-1 (REV 05/88)

OFFSITE NUCLEAR MATERIALS RECEIPT VERIFICATION AND DISPOSITION REPORT
FORM FMPC-ADMS-PRO-1131-1
Figure 4

R - MATERIAL REVISED, ADDED, OR DELETED.



"HAZARDOUS MATERIAL WARNING LABEL"
Figure 5

R - MATERIAL REVISED, ADDED, OR DELETED.

FMPC WESTINGHOUSE MATERIALS COMPANY OF OHIO OPERATIONS DOCUMENT PROGRAM	Page 15 of 18. Revision No. 0	
RESTORATION PROCEDURE	STORAGE OF RADIOACTIVE MATERIAL	SOP 1-C-608 AREA: Plant 1
Authorization: R. L. Gardner, Manufacturing	Supersedes: None	Issue Date: 08-13-90

RADIOACTIVE MATERIAL CONTAINER/STORAGE DISCREPANCY RECORD

INSPECTOR'S NAME:_____ INSPECTOR'S BADGE NO.:_____

LOCATION:_____ DATE:_____ TIME:_____

FMPC LOT NUMBER	MC&A INVENTORY NUMBER	HOLE		SPACING		BROKEN PALLET BOARD		CORRECT LABELING		LOCATION NO.
		YES	NO	YES	NO	YES	NO	YES	NO	

COMMENTS:_____

INSPECTOR'S SIGNATURE:_____ DATE:_____

SUPERVISOR'S SIGNATURE:_____ DATE:_____

RADIOACTIVE MATERIAL STORAGE INSPECTION
FORM FMPC-REST-3182
Figure 6

R - MATERIAL REVISED, ADDED, OR DELETED.

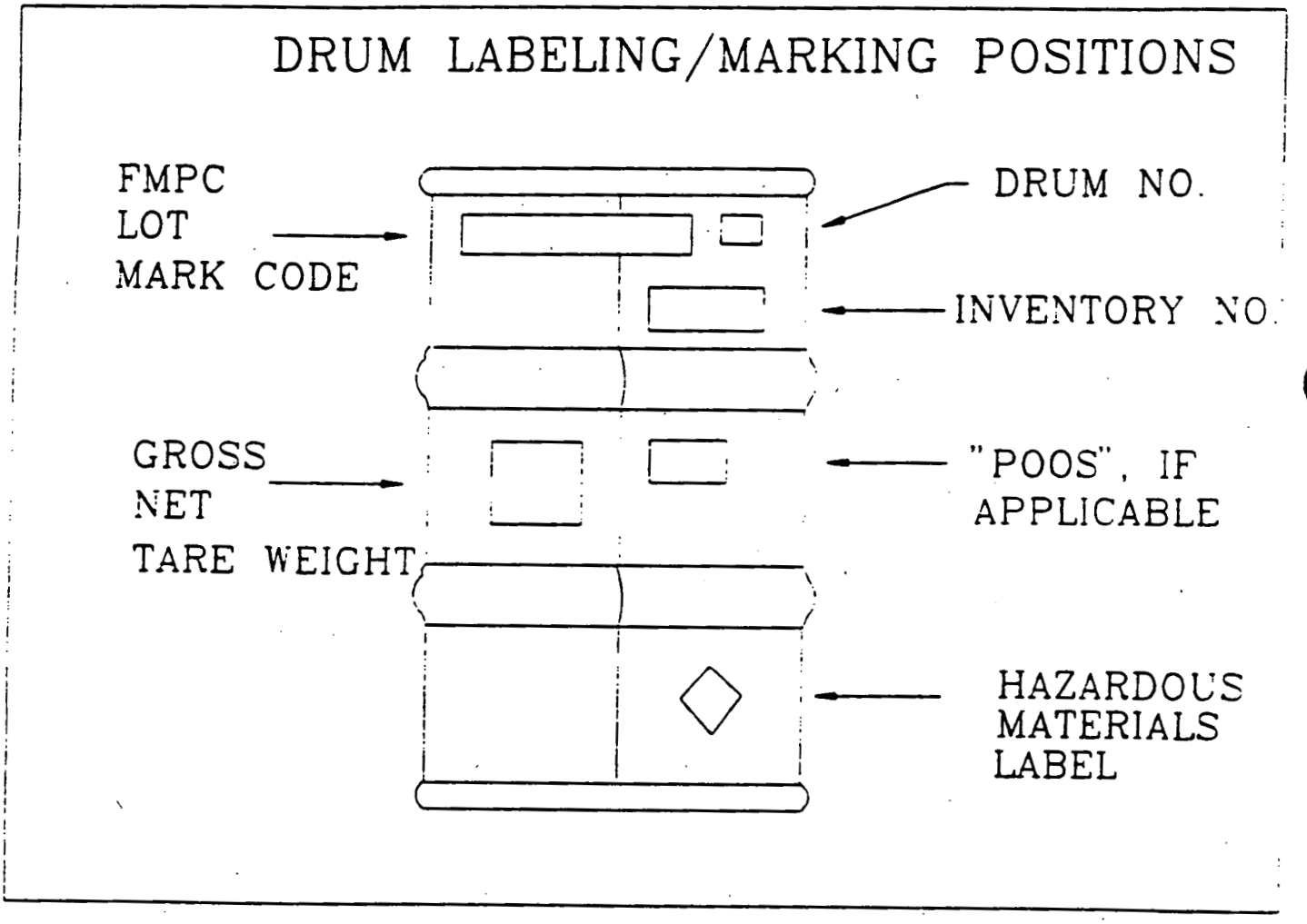


DIAGRAM OF RADIOACTIVE MATERIAL CONTAINER LABELING
Figure 7

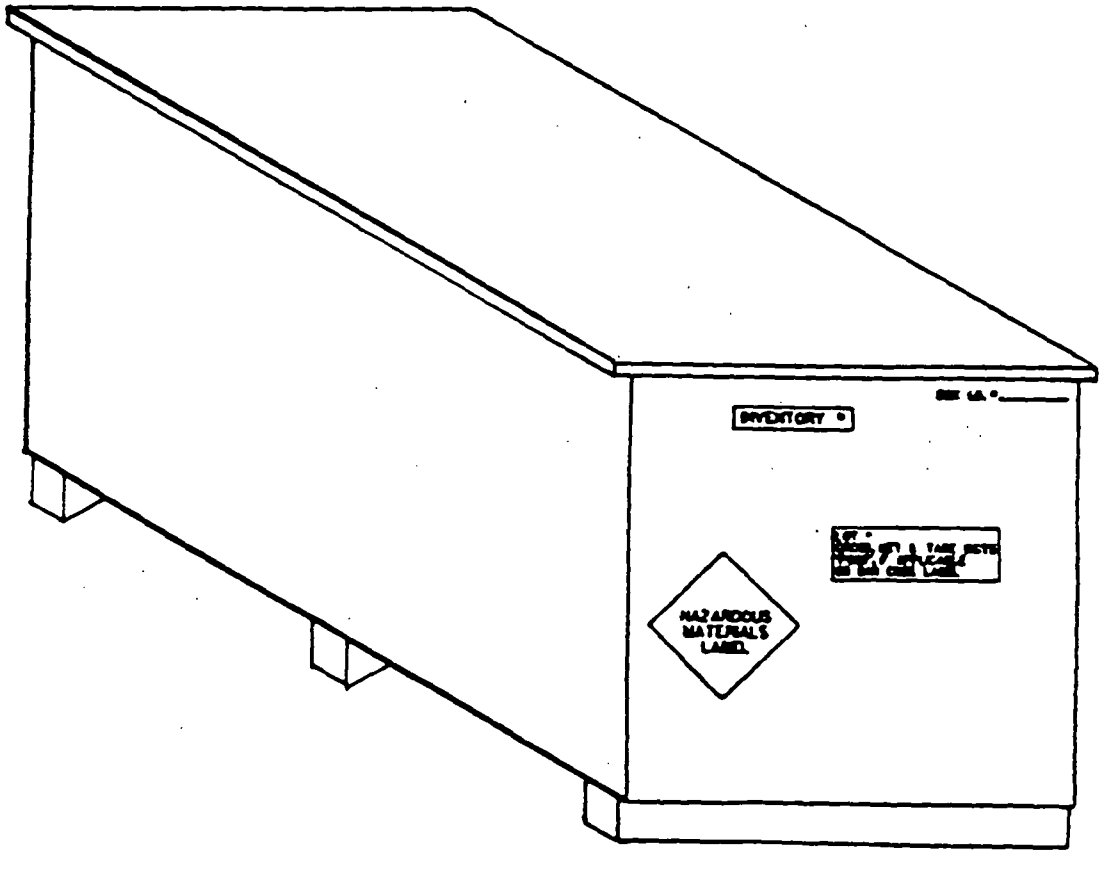


DIAGRAM OF LLRM BOX LABELING
Figure 8

R - MATERIAL REVISED, ADDED, OR DELETED.

RECORD OF ISSUE/REVISIONS

DATE	REV. NO.	DESCRIPTION AND AUTHORITY
08-13-90	0	Procedure required for storing radioactive material per Request No. P89-448, initiated by K. Dunbar.

R - MATERIAL REVISED, ADDED, OR DELETED.

STEP 5.

488A

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1.0 PURPOSE

This document provides the procedure for packaging low level radioactive waste (LLRW) for offsite disposal.

2.0 APPLICABILITY

This procedure is applicable to the packaging methods required for shipping LLRW off site at packaging areas.

3.0 RESPONSIBILITIES

3.1 The waste generator/packager shall be responsible for complying with this procedure.

3.2 The supervisor of the waste generation area or packager shall be responsible for the following:

3.2.1 Specifying applicable scale check procedures and standard tare weight of packages.

3.2.2 Ensuring packaging materials are available for operators.

3.2.3 Ensuring that trained personnel package waste material.

3.2.4 Determining disposition of material identified in this procedure.

3.2.5 Ensuring that personnel package waste for shipment to meet applicable NTS, DOT, and EPA regulations.

3.2.6 Contacting Industrial Hygiene or Radiological Safety to determine the appropriate respiratory protection for the process being performed.

3.2.7 Providing operators with the required respiratory protection.

3.2.8 Ensuring the lid on an unfilled waste container is secured when no packaging is occurring to prevent additions of unknown materials.

3.2.9 Ensuring waste packages are weather-protected before, during, and after use to prevent moisture build-up.

3.2.10 Contacting Radiological Safety prior to opening any drum of radioactive or unknown material.

3.2.11 Contacting Industrial Hygiene prior to opening any container suspected of containing asbestos.

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3.0 RESPONSIBILITIES (cont.)

3.3 Traffic shall be responsible for specifying the required waste container, transporting packaged waste to the applicable storage area, and weighing sea/land containers.

3.4 Materials Control and Accountability (MC&A) shall be responsible for completing a tally sheet for drums of non-RCRA wet and dried residues.

4.0 DEFINITIONS

4.1 Low Level Radioactive Waste (LLRW) - Waste the contains radioactivity and is not classified as high level waste, transuranic waste, or spent nuclear fuel or 11e(2) byproduct material as defined by DOE Order 5820.2A. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level waste, provided the concentration of transuranic is less than 100 n Ci/g.

4.2 Waste Generator - Organization (point of generation) at which waste is originated.

4.3 Overpack - A container into which one or more smaller containers are placed.

4.4 Waste Container - A container which meets DOT requirements and NTS acceptance criteria.

4.5 RCRA (Resource Conservation and Recovery Act) - The Congressional Act which established safe and environmentally acceptable management practices for specific wastes. RCRA requires strict "cradle to grave" control and proper management of hazardous wastes.

4.6 Respirable Fines - Particulates and vapors capable of being inhaled.

5.0 GENERAL

5.1 The waste generator/packager shall package waste material in a container specified for disposal by Traffic.

5.2 Stencilling shall be 1-1/2 inch (minimum) legible block letters using waterproof ink/paint unless otherwise specified.

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS

6.1 A defined safety system is not involved.

6.2 Safety glasses with side shields shall be worn unless other eye protection is specified.

6.3 Respiratory protection provided by the supervisor shall be worn when required.

6.4 Leather-palm gloves shall be worn when handling drums/boxes/ containers, operating equipment, and when handling rough, sharp-edged, or contaminated material.

6.5 HEPA type filter vacuum cleaners or a vacuum system approved by IRS&T with a current DOP test label properly affixed to vacuum shall be used for cleaning.

6.6 Only trained personnel shall handle asbestos-containing materials.

6.7 Adequate ventilation must be provided when using silicone adhesive sealant.

6.8 Any circumstance which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to a supervisor. The supervisor shall immediately report the circumstance or possible radioactive materials intake to IRS&T Radiological Safety Section for evaluation. The involved personnel shall report to the Urine Sampling Station at the end of their shift to complete an Incident Investigation Report (IIR) (Form FMPC-ES&H-1458), and submit a urine sample. The involved employees shall also report to the Urine Sampling Station at the start of their next shift to submit a followup urine sample. Employees are responsible for complying with additional requirements as specified by the Radiological Safety Section.

NOTE: WARNINGS, CAUTIONS, and NOTES precede the step/item to which they apply.

7.0 PROCEDURE

> WARNING: A RADIOLOGICAL SAFETY TECHNICIAN SHALL BE PRESENT PRIOR TO OPENING ANY CONTAINER OF UNKNOWN RADIOACTIVE MATERIAL.

> WARNING: AN INDUSTRIAL HYGIENE REPRESENTATIVE SHALL BE PRESENT PRIOR TO OPENING ANY DRUM SUSPECTED OF CONTAINING ASBESTOS.

CAUTION: PRIOR TO PERFORMING THE PACKAGING OPERATION, EACH CONTAINER SHALL BE INSPECTED BY THE WASTE GENERATOR/PACKAGER TO ENSURE THE CONTAINER IS EMPTY.

NOTE: Items 7.1 through 7.3 shall be performed prior to the packaging of any waste.

7.1 Prohibited Material Check

WASTE GENERATOR/PACKAGER

7.1.1 Check that a "Prohibited Materials List" (Figure 1) is displayed in the loading area or on the container.

7.1.1.1 If the list is not posted, notify the supervisor.

WASTE GENERATOR AND QUALITY ASSURANCE

7.1.2 Ensure the waste to be packaged is not on the "Prohibited Materials List".

7.1.2.1 If the waste is listed on the "Prohibited Materials List", do not package this waste. Notify the supervisor for disposition.

SUPERVISOR

7.1.2.2 Dispose of the waste on a case by case basis.

7.0 PROCEDURE (cont.)

7.2 Waste Characterization

WASTE GENERATOR/PACKAGER

7.2.1 Ensure a Material Evaluation Form (MEF), FMPC-OPR-3252 has been completed determining the material as RCRA/Non-RCRA and additional documentation from Environmental Compliance is provided specifying evaluation results for LLRW.

NOTE: A sample of the waste for TCLP may be required as requested by Operable Unit 3 (OU3) Compliance.

7.2.1.1 If an MEF has not been generated, obtain a numbered MEF from Waste Management Records and initiate a "Material Evaluation" per SSOP-0002.

NOTE: RCRA waste shall not be shipped.

7.2.1.2 If the waste is determined to be RCRA, notify the supervisor for disposition.

7.2.1.3 If the waste is determined to be non-RCRA, proceed to 7.2.2.

7.2.2 If notified by the supervisor a sample is required for major radionuclides and other suspected nuclides, obtain a sample of the waste per SOP 1-C-101.

7.3 Waste Inspection

WASTE GENERATOR/PACKAGER

7.3.1 Check waste for free liquid.

7.3.1.1 If free liquid is present which exceeds 0.5% of the material volume, notify supervisor.

7.3.1.2 If free liquid exists which does not exceed 0.5% of the material volume, proceed to the applicable packaging section of this SSOP.

7.3.2 When weather drops below 32°F, carefully inspect waste for ice.

7.3.2.1 If ice is present in waste, notify supervisor.

7.0 PROCEDURE (cont.)

7.4 Filling 55 and 85 Gallon Drums

WASTE GENERATOR/PACKAGER

7.4.1 Inspect the empty drum for damage, such as corrosion, dents, holes or other defects (Refer to Tables 1 and 2).

7.4.1.1 If damaged, mark the lids or side of the damaged drums with a red "X" and refer to Tables 1 and 2 for corrective action, as applicable.

7.4.2 Stencil on the drum the lot and drum number in accordance with the FEMP Lot Marking and Color-Coding System, RM-0005 or apply designated preprinted label (See Figure 2).

7.4.3 Weigh the empty drum per substeps 7.4.3.1 through 7.4.3.5.

SUPERVISOR

7.4.3.1 Specify the scale and the method of transporting the drum to the scale.

WASTE GENERATOR/PACKAGER

NOTE: The scale shall be inspected and operated in accordance with the SOP applicable to the area.

7.4.3.2 Inspect the scale to be used.

7.4.3.3 Move the drum on to the scale.

7.4.3.4 Obtain the tare weight.

7.4.3.5 Remove the drum from the scale and move to the loading area.

7.4.4 Stencil the tare weight on the drum (See Figure 2).

7.4.5 Record the data from the drum on to "Item Production/ Certification/Identification" XX Card, Form FMPC-CONT-1945-XX.

7.0 PROCEDURE (cont.)

WASTE GENERATOR/PACKAGER

7.4.6 Remove the drum lock ring and lid.

CAUTION: DO NOT FILL THE DRUM ABOVE THREE INCHES FROM THE TOP.

NOTE: Because density varies according to material type, the volume of material to be packed will vary.

7.4.7 By estimation, fill the 55 gallon drum to a maximum of 1,200 pounds (plus tare weight) and the 85 gallon drum to 1,000 pound maximum (plus tare weight).

7.4.8 Place a lid on the drum.

7.4.9 Secure the drum lid by installing a bolt-type lock ring and tighten the bolt.

7.4.10 Weigh drum per Item 7.5.

7.4.11 Mark the drum with the gross weight and net weight using two inch (minimum) letters.

WASTE GENERATOR/PACKAGER

7.4.12 Complete the "Item Production/Certification/Identification" XX Card, Form FMPC-CONT-1945-XX by entering the gross and net weights and transmit card to MC&A.

7.4.13 If the drum contains respirable fines, overpack per SOP 20-C-600.

7.4.14 Using the hoist/crane and barrel grab or equipment specified by supervisor, place the drum with bolt of lock ring facing outward on a pallet.

TRAFFIC

7.4.15 Strap the drum(s) and move the pallet(s) to the storage area designated by the supervisor.

WASTE GENERATOR/PACKAGER

7.4.16 When the operation is complete and all pallets are stored, notify the supervisor that the drums are ready to be moved to the designated waste staging area.

7.0 PROCEDURE (cont.)

7.5 Weighing Singlepack/Overpack Drums

SUPERVISOR

7.5.1 Specify the scale and the method of transporting the drum.

WASTE GENERATOR/PACKAGER

NOTE: The scale shall be inspected and operated in accordance with the SOP applicable to the area.

7.5.2 If not already completed, inspect the scale to be used as specified by the supervisor.

7.5.3 Notify supervisor the drum is ready to be moved to scale.

SUPERVISOR

7.5.4 As applicable, notify Traffic that a Motor Vehicle Operator (MVO) is required.

MVO/PACKAGER

7.5.5 Move the drum onto the scale.

WASTE GENERATOR/PACKAGER

7.5.6 Obtain the gross weight of the drum.

> WARNING: MAXIMUM WEIGHT OF DRUMS SHALL BE 700 POUNDS FOR A 30 GALLON OVERPACK AND 1,200 POUNDS FOR 55 GALLON OVERPACKS, 55 GALLON SINGLEPACKS, AND 85 GALLON OVERPACKS. MAXIMUM WEIGHT OF 85 GALLON SINGLEPACKS SHALL BE 1,000 POUNDS.

7.5.7 If the drum is over the specified weight limit, proceed as follows:

7.5.7.1 Remove lock ring(s) and lid(s) from the drums.

NOTE: The removed material may be included in an underweight drum of the same lot or packaged in another drum of the same lot.

7.0 PROCEDURE (cont.)

WASTE GENERATOR/PACKAGER

7.5.7.2 Remove material from the drum until the drum is within limit. Place the removed material in an approved container.

7.5.7.3 Place lid securely on the drum.

MVO/PACKAGER

7.5.8 Remove the drum from the scale.

WASTE GENERATOR/PACKAGER

7.5.9 If the drum contains respirable fines, install lever lock ring or bolt with a wire seal, record the seal number and date on Form FMPC-CONT-1945-XX, and overpack per SOP 20-C-600.

7.6 Filling Metal Boxes With Loose Material

WASTE GENERATOR/PACKAGER

7.6.1 Visually inspect boxes for rust, dents, or holes, including the bottom per Tables 1 and 2.

7.6.1.1 If damaged, mark side of box with a red "X" and complete corrective action per Tables 1 and 2.

7.6.2 If the bottom of the box has a drain plug, ensure plug is securely in place.

SUPERVISOR

7.6.3 Specify the scale and the method of transporting the box.

WASTE GENERATOR/PACKAGER

7.6.4 Move the empty metal box to the staging area.

7.6.5 Remove banding and cardboard packing material from the metal box and place in a designated container.

7.0 PROCEDURE (cont.)

WASTE GENERATOR/PACKAGER

7.6.6 Tare weigh each twentieth box to verify standard tare weight as follows:

NOTE: The scale shall be inspected and operated in accordance with the SOP applicable to the area.

7.6.6.1 If scale to be used as specified by the supervisor has not been checked, inspect scale.

7.6.6.2 Place box on the scale, obtain tare weight.

7.6.7 Record the weight on a "Box Tare Weight Check", Form FMPC-PRO-2867.

7.6.8 Remove box from the scale.

7.6.9 Remove lid and place in a designated location to prevent damage.

7.6.10 Add one fifty-pound bag of uncalcined diatomaceous earth spread evenly or sheets of wet-strength polypropylene pulp, super-absorbent fabric in the bottom of the box.

7.6.11 Place a clean, used skid over dicalite or fabric in the bottom of the box.

CAUTION: MATERIAL SHALL NOT BE LOADED IN BOX ABOVE THREE INCHES FROM THE TOP.

7.6.12 Load loose materials in box as tightly as possible.

7.6.13 When box is full, place lid on box and notify supervisor box is loaded.

SUPERVISOR

7.6.14 Specify the scale to be used and the method of transporting the box to the scale.

7.0 PROCEDURE (cont.)

WASTE GENERATOR/PACKAGER

NOTE: The scale shall be inspected and operated in accordance with the applicable scale procedure for the area of the packaging operation.

7.6.15 If not already completed, perform scale check according to the applicable SOP in the area of the packaging operation.

7.6.16 Move the box on to the scale.

7.6.17 Weigh the box including box pins and other hardware to ensure gross weight does not exceed 6000 lbs.

7.6.18 Remove the box from the scale.

7.6.19 Mark the side of the box with the gross weight and content description in 1-1/2 inch (minimum) block letters (See Figure 4).

7.6.20 Affix a Hazardous Waste Label (See Figure 3) on the box as shown in Figure 4.

7.6.21 Notify QA the box is ready for certification.

QUALITY ASSURANCE

7.6.22 Certify the box per applicable department procedures.

7.6.22.1 If the box does not meet certification requirements, complete a DCAR per SSOP-0023, tag the box for correction, and notify the generator.

WASTE GENERATOR/PACKAGER

7.6.23 Fill out an "Item Production/Certification/Identification card, Form FMPC-CONT-1945-XX, including standard tare weight specified by the supervisor, and the content description and transmit to MC&A.

7.6.24 Using fabric strapping or closure bolts, secure lid on the box for interplant shipment.

7.6.25 Notify the supervisor that boxes are ready to be moved to the Waste Management staging area.

7.0 PROCEDURE (cont.)

7.7 Loading Drums in Metal Boxes

WASTE GENERATOR/PACKAGER

7.7.1 Prior to completing Item 7.7, proceed to 7.10 or 7.11 (as applicable) for drum inspection.

7.7.2 Visually inspect boxes for corrosion, holes, or dents per Tables 1 and 2.

7.7.2.1 If damage is found, mark side of box with a red "X" and complete corrective action per Tables 1 and 2.

7.7.3 Place empty metal box in staging area.

7.7.4 Remove the banding and cardboard packing material from box and place in designated container.

7.7.5 Tare weigh each twentieth box per 7.6.6.1 through 7.6.6.2.

7.7.6 Record the weight on a "Box Tare Weight Check", Form FMPC-PRO-2867.

7.7.7 Remove lid from metal boxes.

7.7.8 Add a 50 lb bag of uncalcined diatomaceous earth or sheet(s) of wet-strength polypropylene pulp, super-absorbent fabric to the floor of the box.

7.7.9 Using a forklift, move box to a designated location to prevent damage.

7.7.10 Check drums to ensure that lever lock rings are closed.

7.7.10.1 If the drum contains respirable fines, install wire seal through lever lock ring.

7.7.11 Complete an "Item Production/Certification/Identification Card", Form FMPC-CONT-1945-XX per drum and insert the drum lot number and tare weight on the card and transmit to MC&A.

NOTE: Inspect and operate the hoist/crane in accordance with the applicable SOP for the area.

7.7.12 Ensure that the hoist/crane to be used has been inspected.

7.0 PROCEDURE (cont.)

WASTE GENERATOR/PACKAGER

7.7.13 Place barrel grab over drum.

7.7.14 Attach the lifting device specified by the supervisor on each side of the drum ring.

7.7.15 Position drum over the top of the box.

7.7.16 Lower drum into box and remove the lifting device.

CAUTION: DO NOT EXCEED A MAXIMUM GROSS WEIGHT OF 6,000 POUNDS.

7.7.17 Ensuring the weight does not exceed 6,000 pounds, repeat steps 7.7.1 through 7.7.16 until enough drums are loaded to fill a box.

7.7.18 When the box is filled, add a fifty-pound bag of uncalcined diatomaceous earth or sheets of wet-strength polypropylene pulp, super-absorbent fabric to the top of drums if condensation/frost is present or could develop on exterior of drums.

7.7.19 Place the lid on the box.

7.7.20 Obtain tabulated tare weight of box and contents. Record the tabulated tare box weight, contents, and gross weight on the FMPC-CONT-1945 card.

7.7.21 Stencil on the box the shipment log number, box identification, and gross weight (See Figure 4).

7.7.22 Affix a Hazardous Material Warning Label (See Figure 3) as shown in Figure 4.

7.7.23 Notify QA the box is ready for certification.

QUALITY ASSURANCE

7.7.24 Certify the box per the applicable department procedure.

7.7.24.1 If the box is not certified, complete a DCAR per SSOP-0023, tag the box for correction, and notify the generator.

7.0 PROCEDURE (cont.)

WASTE GENERATOR/PACKAGER

7.7.25 Using fabric strapping, secure lid on the box for interplant shipment.

7.7.26 Notify the supervisor that boxes are ready to be moved to the Waste Management staging area.

7.8 Loading Asbestos in Boxes

WASTE GENERATOR/PACKAGER

> WARNING: ONLY CERTIFIED PERSONNEL SHALL HANDLE AND LOAD ASBESTOS-CONTAINING MATERIAL.

7.8.1 Visually inspect boxes for rust, holes, or dents.

7.8.1.1 If damage is found, mark the side of the box with a red "X".

7.8.1.2 Notify the supervisor of damaged box condition and request instructions.

7.8.1.3 Move damaged boxes to designated area.

7.8.2 Move the empty box to the staging area.

7.8.3 Remove banding and cardboard packing material and place in a designated container.

7.8.4 Tare weigh each twentieth box per 7.6.6.1 through 7.6.6.2.

7.8.5 Record the weight on a "Box Tare Weight Check", Form FMPC-PRO-2867.

7.8.6 Remove and place box lid in a designated location to prevent damage.

7.8.7 Stencil lot number per FEMP Lot Marking and Color Coding System or content description on the box (See Figure 4).

7.8.8 Affix a Hazardous Material Warning Label (See Figure 3) to box in location shown in Figure 4.

7.8.9 Add a minimum of one fifty-pound bag of uncalcined diatomaceous earth spread evenly in the bottom of the box.

3511

7.0 PROCEDURE (cont.)

WASTE GENERATOR/PACKAGER

7.8.10 Adhere "Danger-Asbestos" stickers on two sides and lid of box.

7.8.11 Check to ensure that asbestos is double-bagged in labeled asbestos disposal bags.

7.8.12 Load asbestos in box ensuring not to exceed maximum gross weight.

CAUTION: DO NOT EXCEED MAXIMUM GROSS WEIGHT OF 6,000 POUNDS FOR METAL BOXES/5,000 POUNDS FOR WOODEN BOXES.

7.8.13 Place lid on the box.

7.8.14 Using fabric strapping, secure lid on the box for interplant shipment.

7.8.15 Perform scale check per the applicable SOP in the area of the packaging operation.

7.8.16 As directed by the supervisor, move box to scale.

7.8.17 Weigh the box.

7.8.18 Fill out an "Item Production/Certification/Identification" card, Form FMPC-CONT-1945-XX and transmit to MC&A.

7.8.19 Notify the supervisor that boxes are ready to be moved to the Waste Management staging area.

7.9 Packaging Material into Sea/Land Containers

WASTE GENERATOR/PACKAGER

NOTE: Do not place containers directly on ground.

7.9.1 Check the container for damage such as structurally affecting dents, stress cracks, flaking paint, rust, holes, and water leaks.

7.9.1.1 If container is damaged, mark a red "X" on the side of the container, notify supervisor of damage and request disposition of damaged container. Move unacceptable container to area designated by Waste Shipping.

7.9.1.2 If the container is free from damage, proceed to 7.9.2.

7.0 PROCEDURE (cont.)

WASTE GENERATOR/PACKAGER

7.9.2 Notify Waste Shipping that the container is ready for shipping preparation.

7.9.3 Attach a Prohibited Materials List (See Figure 1) to the container in a visible location.

WARNING: VAPOR FROM SILICONE ADHESIVE IS HAZARDOUS.

NOTE: Adhesive shall be applied to the farthest inside section first and outward from container to minimize inhalation of vapor.

NOTE: The bead of sealant shall be a minimum of 1/4 inch.

7.9.4 In a well ventilated area, apply a continuous bead of GE RTV SILICONE RUBBER ADHESIVE SEALANT, or equivalent, on all seams and corners of the container interior.

7.9.5 Check to ensure all vents are closed and sealed.

7.9.6 Line the container floor with wet-strength polypropylene/pulp super-absorbent fabric, blotter paper, or uncalcined diatomaceous earth.

7.9.7 Cover the absorbent fabric, blotter paper or uncalcined diatomaceous earth with a 0.006 inch thick plastic sheet that extends at least 36 inches up each side of the container.

7.9.8 Place plywood on the container floor and up to approximately four feet in height on all sides.

7.9.9 Remove all container outside markings not related to load (See Figure 5).

CAUTION: THE GROSS WEIGHT OF THE CONTAINER SHALL NOT EXCEED 42,000 LBS.

CAUTION: AN UNSEALED CONTAINER SHALL BE LOCKED OR TEMPORARILY SEALED WHEN NOT ATTENDED.

7.9.10 Load the container. Use all the space in the container.

7.0 PROCEDURE (cont.)

WASTE GENERATOR/PACKAGER

7.9.11 After the container has been filled, clean the back ledge of the container.

7.9.12 Add a roll of wet-strength polypropylene/pulp super absorbent fabric extending width of container on base of lid/door.

7.9.12.1 If moisture is still present, add additional uncalcined diatomaceous earth or sheets of wet-strength polypropylene, super-absorbent fabric as needed.

7.9.13 Shut the container doors.

7.9.14 Complete applicable sections of the "Item Production/ Certification/Identification" card, Form FMPC-CONT-1945-XX and transmit to MC&A.

7.9.15 Notify the supervisor that sea/land containers are ready to be weighed.

WASTE GENERATOR SUPERVISOR

7.9.16 Notify Traffic to transport containers to Waste Management staging area.

TRAFFIC (HEAVY EQUIPMENT)

7.9.17 Move containers to Waste Management staging area per applicable department procedures.

7.9.18 Weigh the containers per applicable department procedure.

7.9.19 Deliver weigh ticket to Waste Shipping Coordinator.

7.10 Inspecting Drums Containing Non-RCRA Dried Residues

WASTE GENERATOR/PACKAGER

7.10.1 For a drum not in an overpack, proceed to step 7.10.3.

7.10.2 For an overpacked drum, complete the following:

7.10.2.1 Inspect the hoist/crane to be used if not previously completed.

7.0 PROCEDURE (cont.)

WASTE GENERATOR/PACKAGER

NOTE: The supervisor shall specify the hoist/crane to be used.

NOTE: Hoists/cranes shall be inspected and operated in accordance with the SOP applicable to the area.

7.10.2.2 Remove overpack lid.

7.10.2.3 Install a barrel grab over the drum in the overpack.

7.10.2.4 Attach the barrel grab to the hoist/crane, lift the drum from overpack, and lower on to the floor.

7.10.2.5 Remove barrel grab from the drum.

7.10.3 Notify MC&A the drum(s) are ready for inspection and re-packaging.

MC&A

7.10.4 Complete a MC&A tally sheet for the drum(s).

WASTE GENERATOR/PACKAGER

7.10.5 Remove lid from the drum and inspect drum interior for free-standing liquid.

7.10.5.1 If free-standing liquid is present at the top of the drum, pump liquid from the drum or drain the liquid from the drum using a drainage lid into the facilities sump system.

7.10.6 Replace lid on the drum.

7.10.7 Using a forklift, move drum to the scale specified by the supervisor.

7.10.7.1 If not already completed, perform scale check according to the applicable SOP in the area of the packaging operation.

NOTE: The scale shall be inspected and operated in accordance with the applicable scale procedure for the area of the packaging operation.

7.10.8 Weigh the drum and compare this weight to the weight stencilled on the drum.

7.0 PROCEDURE (cont.)

WASTE GENERATOR/PACKAGER

7.10.8.1 If the drum weighs more than the stencilled weight, remove drum lid and add one pound of Dicalite for every two pounds above the weight.

7.10.8.2 If the drum weighs less than the stenciled weight, proceed to 7.10.9.

7.10.9 Place lid on the drum and secure lever/lock rings onto the drum.

7.10.10 Using forklift, remove drum from scale and load drum into metal box per 7.7.

NOTE: A packager assigned to handle non-RCRA wet residues shall perform the procedural steps in the Plant 1 Mill Area.

7.11 Inspecting Drums Containing Non-RCRA Wet Residues

SUPERVISOR

7.11.1 Contact Traffic to transport drum(s) to Plant 1 Mill Area for inspection.

TRAFFIC

7.11.2 Deliver transport drum(s) to Plant 1 Mill Area per applicable department procedure.

PACKAGER

7.11.3 After delivery of drums to Plant 1 Mill Area, notify MC&A the drum(s) are ready for inspection and re-packaging.

MC&A

7.11.4 Complete a MC&A tally sheet for the drum(s).

PACKAGER

7.11.5 Remove the lid from drum and inspect for free-standing liquid.

7.11.5.1 If the drum contains oil, use a forklift and move drum to designated area. Notify supervisor for disposition of drum.

7.0 PROCEDURE (cont.)

PACKAGER

7.11.5.2 If the drum contains other free-standing liquids, complete steps 7.11.6 through 7.11.12.

7.11.5.3 If no free-standing liquid is present in the drum, proceed to 7.11.12.

7.11.6 Obtain a drainage lid and place on the drum.

7.11.7 Using forklift, rotate drum approximately at a 45 degree angle, drain liquid from drum into the Plant 1 Sump System until no liquid flows from drainage lid, and lower drum to floor.

7.11.8 Inspect and drain the remaining drums per steps 7.11.5 through 7.11.7.

7.11.9 After draining the drums, inspect each drum for damage.

7.11.9.1 If drum is damaged, complete 7.11.10 and then using a forklift, move damaged drum to holding area, as specified by supervisor, for disposal.

7.11.9.2 If drum is not damaged, proceed to 7.11.10.

7.11.10 Using a forklift, transfer the drained material into another drum of drained material filling the drum approximately six inches from the top.

NOTE: Steps 7.11.11 through 7.11.12 are applicable to filled and partially filled drums of drained material.

7.11.11 Add a minimum of one inch of dicalite to each drum.

7.11.12 Replace lid on the drum, close lever lock/bolt ring, and load the drum into a metal box per Item 7.8.

7.11.13 Using a forklift, move any empty drums to holding area for disposal.

8.0 REFERENCE DOCUMENTS

8.1 SSOP-0002, "Completing the Material Evaluation Form"

8.2 SSOP-0023, "Deviation and Corrective Action Reporting"

8.0 REFERENCE DOCUMENTS (cont.)

8.3 RM-0005, "FEMP Lot Marking and Color-Coding System"

8.4 20-C-600, "Overpacking Defective Containers"

9.0 APPLICABLE FORMS

9.1 FMPC-CONT-1945-XX, "Item Production/Certification/Identification"

9.2 FMPC-PRO-2867, "Box Tare Weight Check"

9.3 FMPC-OPR-3252, "Material Evaluation"

10.0 FIGURES

10.1 Figure 1, "Prohibited Materials List"

10.2 Figure 2, Diagram of LLRW Drum Labeling

10.3 Figure 3, Diagram of Hazardous Waste Label

10.4 Figure 4, Diagram of Metal Box Identification

10.5 Figure 5, Diagram of Sea/Land Identification

TABLE 1
CORROSION INSPECTION CATEGORIES

CATEGORY	CHARACTERISTIC	COULD CAUSE LOSS OF DRUM INTEGRITY		CORRECTIVE ACTION
		YES	NO	
A	Severe corrosion with deep pitting and/or metal flaking	X		1. Notify supervisor. NOTE: The drum requires disposition as directed by supervision within 24 hours.
B	Corrosion with shallow pitting and/or mild metal flaking		X	1. Proceed as directed by the supervisor. NOTE: Disposition shall be determined by the supervisor following review of completed inspection form.
C	Surface rust with no pitting and mild paint flaking which exposes bare metal		X	1. Proceed as directed by the supervisor. Repainting shall be scheduled by supervisor.

TABLE 2
LLRW CONTAINER INSPECTION

INSPECTION ITEM	INSPECTION CRITERIA	CORRECTIVE ACTION REQUIRED
Hole	An opening in the container including breach, gouge, puncture or leak.	Notify supervisor of condition and request disposition instructions.
Dent	A crease, depression of hollow made by blow or pressure; a concave distortion which jeopardizes the integrity of the container. A dent in the top or bottom rim.	Notify supervisor of condition and request disposition instructions.
Bulge	A swollen area, a convex distortion, an outward bend which jeopardizes the integrity of the container.	Notify supervisor of condition and request disposition instructions.

PACKAGING GUIDELINES

FOR

WASTE GENERATOR

PACKAGE HAS BEEN PROPERLY PREPARED FOR CLOSING:

- 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 HAVE BEEN EXCLUDED (SEE BELOW)
- PACKAGING HAS NOT BEEN DAMAGED DURING LOADING
- LINER IS IN PLACE AND PROPERLY LAPPED AND SEALED

PROHIBITED MATERIALS

COMPRESSED GASES
(UNPUNCTURED AEROSOL CANS INCLUDED)

EXPLOSIVES

FREE LIQUIDS

FINE PARTICULATES (RESPIRABLE FINES)

HAZARDOUS WASTE
(SUSPECT RCRA MATERIALS INCLUDED)

CORROSIVE MATERIALS

ETIOLOGIC AGENTS

PROHIBITED MATERIALS LIST
Figure 1

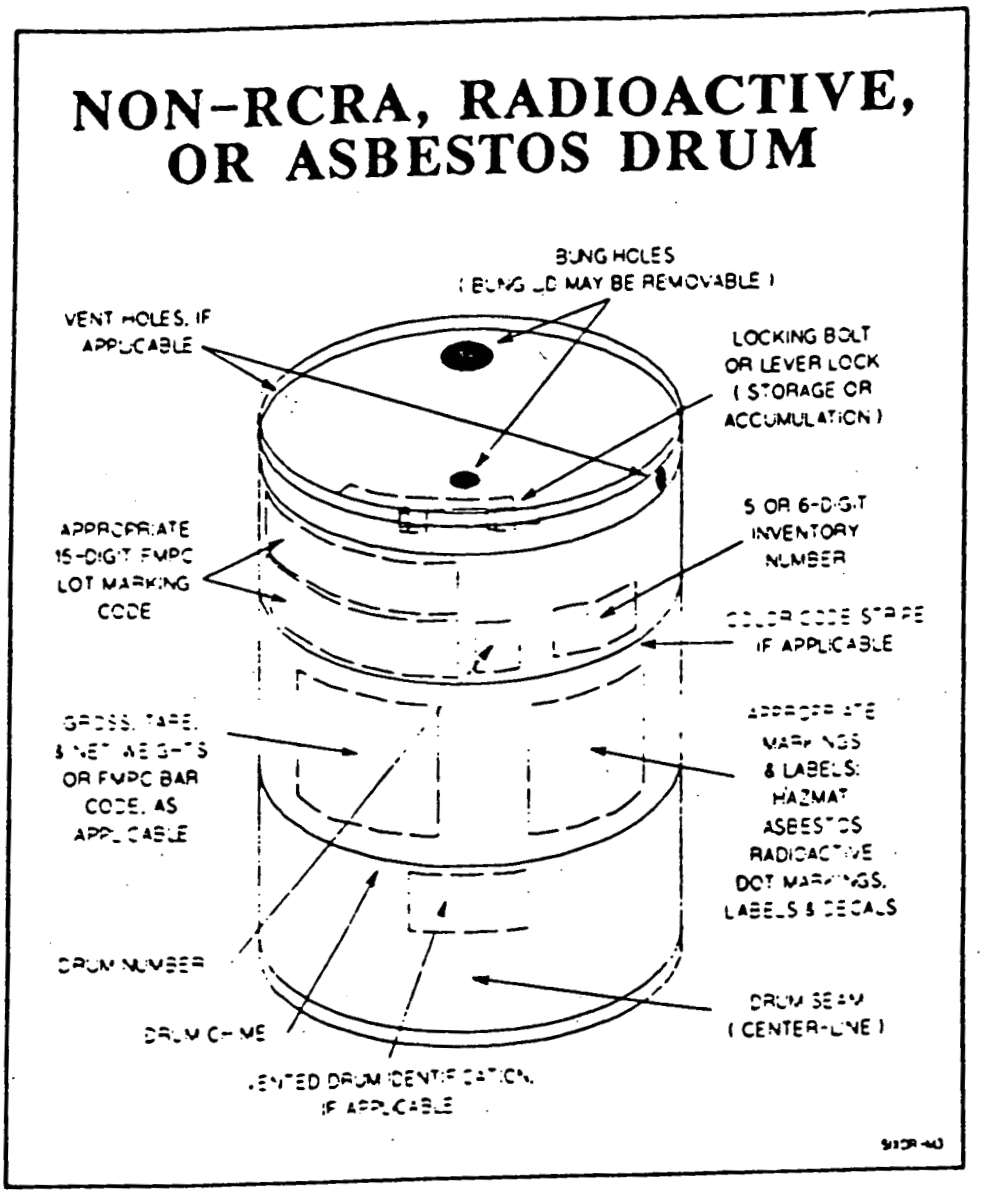


DIAGRAM OF LLRW DRUM LABELING
Figure 2

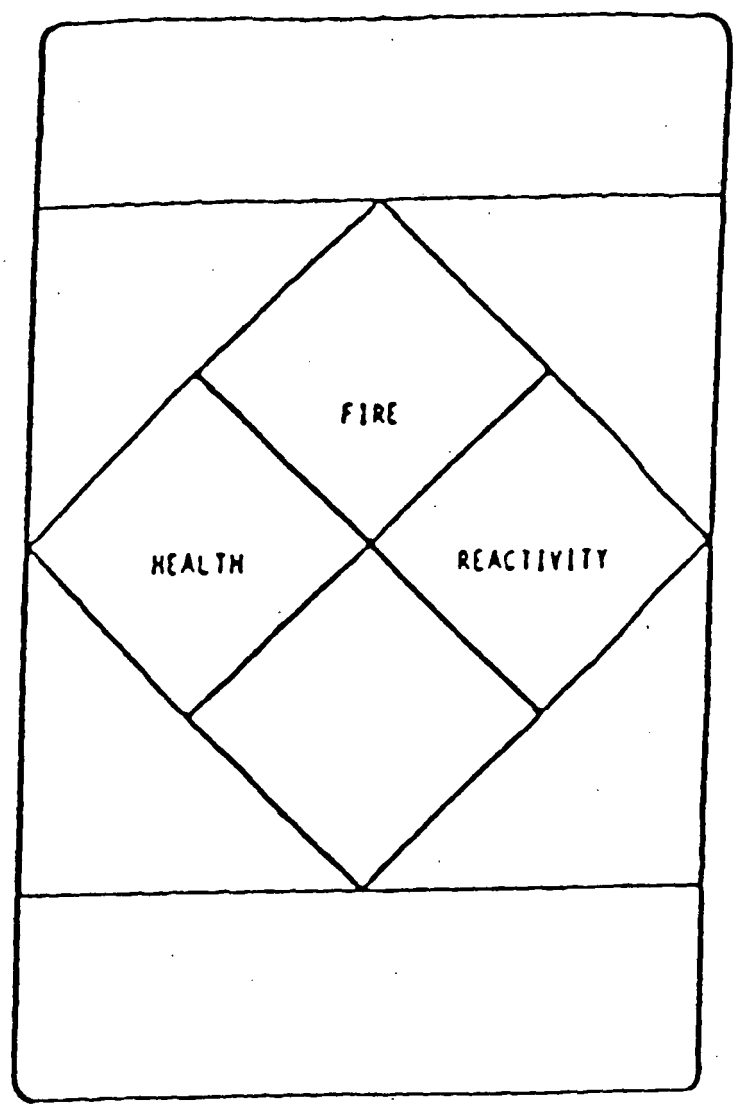


DIAGRAM OF HAZARDOUS WASTE LABEL
Figure 3

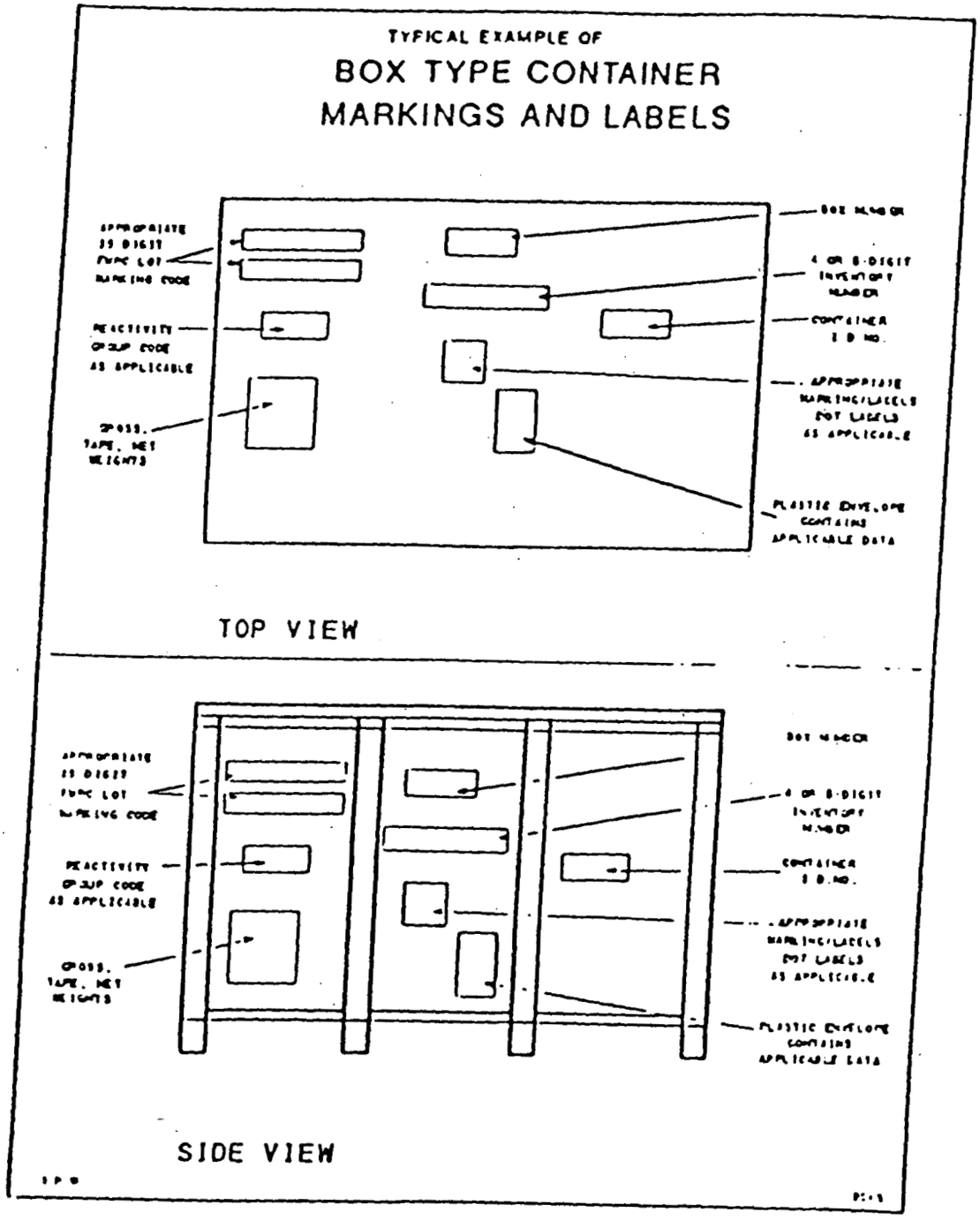


DIAGRAM OF METAL BOX IDENTIFICATION
Figure 4

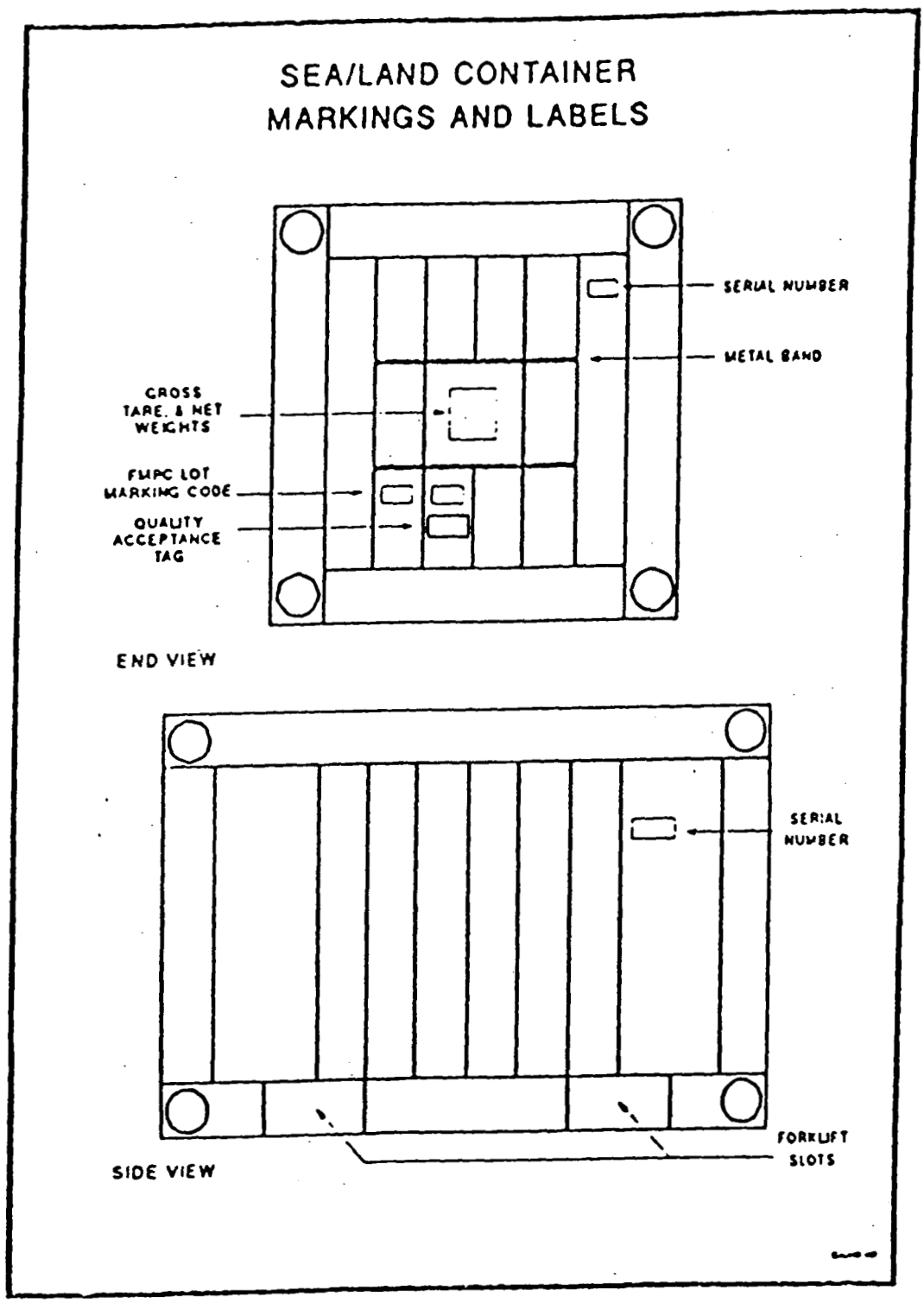


DIAGRAM OF SEA/LAND IDENTIFICATION
Figure 5

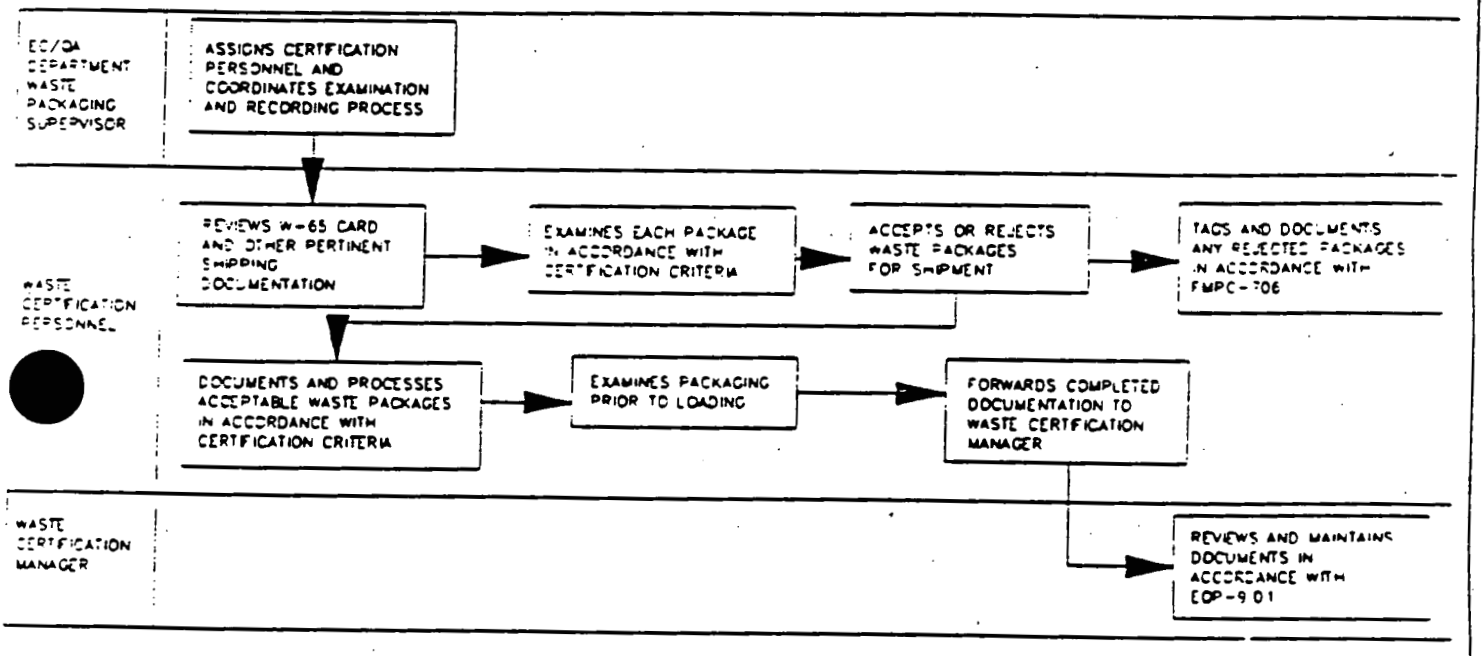
3511

RECORD OF ISSUE/REVISIONS

DATE	REV. NO	DESCRIPTION AND AUTHORITY
10-14-91	0	New site procedure required to replace SOP 20-C-601 per Request No. P91-196, initiated by S. Brown.

1.0 SCOPE

This procedure outlines the method for the certification of waste materials at the Feed Materials Production Center (FMPC) (for additional abbreviations, acronyms, and definitions refer to EQP-1.05) prior to offsite shipment, and is applicable to Low-Level Radioactive Waste (L-LRW) only.



2.0 PROCEDURE

2.1 Industrial Health and Safety Requirements

2.1.1 Leather palm gloves shall be worn by when handling sharp-edged or abrasive materials, containers, lids, and banding materials.

2.1.2 Safety glasses shall be worn by all personnel at all times in the process area, except when another type of eye protection equipment is specified.

2.1.3 A half-mask respirator equipped with radionuclide (purple) cartridges as specified by the Radiological Safety (RS) Technician shall be available for each person working with waste material and shall be used at the direction of the RS Technician.

2.1.4 Any circumstances of event which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake RS for evaluation. The involved personnel shall report to Medical Services at the end of their shift or as directed to submit a urine sample and again report at the start of their next shift to submit another urine sample.

2.1.5 Spill incidents involving RCRA materials shall be reported to the Spill Reporting Advisor in Environmental Compliance in accordance with Site Procedure FMPC-503, "FMPC Spill Incident Reporting and Cleanup."

2.2 General Requirements for Packaging L-LRW

2.2.1 All certification personnel verifying packaging and shipment of L-LRW to the Nevada Test Site (NTS) be trained and qualified on this procedure, NVO-325, and the Waste Certification Program Plan in accordance with EQP-6.04, Qualification of Waste Package Certifiers, or on EQP-6.05, Qualification of Waste Certification Officials.

2.2.2 Materials prohibited by NVO-325 and listed on the Prohibited Materials List (Attachment A) shall not be packaged for shipment.

2.2.3 Only materials approved by the NTS, Solid Waste Compliance and Waste Management shall be shipped. The Waste Certification Manager is responsible for making this information available to all personnel performing verification and certification work.

2.2.4 Only container designs approved for shipment by the NTS that meet the requirements of NVO-325 shall be used. For the purpose of this procedure only those container types verified as acceptable by the Waste Certification Manager, or another Certification Official, are to be used.

2.2.5 All packaging shall be in strong, tight containers that do not leak under normal transport and handling conditions, and which meet the criteria of Title 49 CFR 173.431 and 173.425.

2.2.6 Marking and labeling shall be in accordance with Title 49 CFR 172, Subparts D & E, as follows:

a. Container Number
b. Shipment Number
c. Gross Weight
d. Radioactive markings
e. Other marking and labeling as required for the packaged material

2.2.7 Packages certified and held for shipment must be secure and protected from weather and other adverse conditions having the potential to create an unacceptable condition. Covered or enclosed storage, which includes covering with plastic or tarpaulin are appropriate protective measures. If appropriate measures have not been taken, all packages concerned shall be reexamined by Certification personnel and recertified on the basis of the reexamination results.

2.3 Examination of Metal Drums Prior to Filling

Metal drum examination by Certification prior to filling is not a routine requirement, but may be performed on an audit basis as follows:
Physical Inspection - 50% of lot
W-65 Card comparison - 10% of lot
W-65 Card check for completeness and accuracy - 100% of lot
Results of examination shall be documented with an appropriate check list and signed by Certification personnel performing the examination. Criteria for examination shall include as a minimum:

2.3.1. Except for light rust, drum must be clean and empty.

2.3.2. Examine all surfaces of the drum and lid and reject for any of the following conditions.

a. A breach (a hole, crack, gash, etc.)
b. A dent or bulge which has creased, gouged, or may have otherwise significantly weakened the metal.
c. A dent greater than 1" in depth or extending over 6" in any direction.
d. A significant dent in the bottom rim. A significant dent is one that compromises the integrity of the container.
e. A significant dent in a rolling hoop. Each deficiency is to be evaluated for affect on the integrity of the container.
f. Rust causing exfoliation (scale), sever pitting, or other conditions having a detrimental effect on the serviceability of the waste container. (Small areas of exposed base metal, minor to moderate scratches, and slightly rusted spots are acceptable.)
g. Any deformation or out-of-round condition affecting the integrity of the sealing surface.

2.4 Examination of Metal Drum Filling

The filling of drums with low level radioactive waste materials shall be monitored by Certification personnel. The results of examination shall be documented on the "Waste Certification Examination Report 'Drum Filling'", QAC-881115-5 (Attachment B), and signed by those performing the examination. As a minimum, the examination shall include:

2.4.1 Visual verification that the materials packaged conform in appearance to the materials listed on the waste generator's certification record (currently W-65 card, FMPC-CONT-1945-XX, Attachment C).

2.4.2 If material is a respirable fine, verify that double containment is used in packaging.

3511

2.4.2.1 Plant 8 residues shall be packaged in 48-gallon jug head type lever lock drum, sealed with a sequentially numbered wire seal, and contained in a 55-gallon bolt closure type overpack drum.

2.4.2.2 Other miscellaneous materials may be overpacked with double containment, provided neither container will leak in normal handling and transport.

NOTE: As of the date this procedure is issued, approval has not been received to resume shipment of asbestos to the NTS. Also, there is no assurance that when and if shipment is resumed that asbestos in drums will be acceptable.

2.4.3 Verify that numbered seals are being used to secure inner containers.

2.4.4 Verify that bolt ring closure is used on outer drum, flange is in down position, and lid is secure. (If in doubt, grasp bolt ring with gloved hand and generate movement to determine if ring is loose.)

2.5 Examination of Metal Drums Prior to Loading Trailers For Transfer to Plant 1 (Waste Operations)

Examine packaged drums prior to loading on trailers for transfer to the Plant 1 Area. These drums are to be examined 100% on a best effort basis, and responsibility shall not be waived without the approval of Sitewide QA who shall notify Operations and Waste Management supervision of Certification's inability to perform the examination.

2.5.1. Receives the "Item Production/Certification/Identification" card FMPC-CONT-1945-XX (W-65 Card, Attachment C)

2.5.2 The lid shall be properly seated on the drum and held in place by a bolt ring closure. If bolt and flanges are not lower than rest of ring, then ring is positioned upside down.

2.5.3 Examine all surfaces of the drum and lid and reject for any of the following conditions.

a. A breach (a hole, crack, gash, etc.)
b. A dent or bulge which has creased, gouged, or may have otherwise significantly weakened the metal.
c. A dent greater than 1" in depth or extending over 6" in any direction.
d. A significant dent in the bottom rim. A significant dent is one that compromises the integrity of the container.
e. A significant dent in a rolling hoop. Each deficiency is to be evaluated for affect on the integrity of the container.
f. Rust causing exfoliation (scale), sever pitting, or other conditions having a detrimental effect on the serviceability of the waste container. (Small areas of exposed base metal, minor to moderate scratches, and slightly rusted spots are acceptable.)

g. Any deformation or out-of-round condition affecting the integrity of the sealing surface.

2.5.4 Complete "Waste Certification Examination Report 'Prior to Transfer'", QAC-881115-3 (Attachment D).

2.6 Examination of Wood Boxes Prior to Filling

On an occasional basis, wood boxes will be examined prior to filling to verify compliance. The examination shall be documented on a checklist, and shall include verification of the following:

2.6.1 The box design is approved for shipment to NTS.

2.6.2 The box is not damaged or seriously deteriorated (i.e. rot).

2.6.3 The box is free of holes, splits, or voids between plywood panels and framework.

2.6.4 The box is free of protruding fasteners.

2.6.5 The box is labeled, on opposite sides, with the manufacturer's name and shipping box serial number.

2.6.6 Lids, if in place, fit securely into the top recesses of the box and are free of severe warping, and voids.

2.6.7 Each box has three (four if the large 124 cu. ft. box) 1-1/4" width straps equidistant and horizontally around the perimeter.

2.6.8 Each box has a preformed plastic or 6-mil (0.006") sheet plastic liner. A preformed liner is required if box is to be filled with loose material such as scrap wood, metal, soil, or masonry.

2.6.9 Each box has a minimum of one 50 lb. bag of uncalcined diatomaceous earth (Dicalite) spread evenly in the bottom of the box, or an absorbent pad, covering the liner in the bottom of the box.

2.7 Monitoring of Wood Box Filling Prior to Closure

Wood box filling is to be monitored occasionally to verify compliance. Observance may include the filling process, or may only include observance after filling prior to closure. The results of the monitoring shall be documented on a checklist and shall verify the following:

2.7.1 A prohibited materials list is displayed in the loading area.

2.7.2 Box has a 6 mil (0.006") sheet plastic or a preformed plastic liner. A preformed liner is required if box is to be filled with loose material such as scrap wood, metal, soil, or masonry.

NOTE: A plastic liner is not required if box is being loaded with heavy metal items.

2.7.3 When loading with heavy items, floor seams and one foot up each corner are caulked.

2.7.4 Box contents agrees with documentation on FMPC-CONT-1945-XX (W-65 card, Attachment C).

2.7.5 No prohibited items are being or have been packaged.

NOTE: Depending on the contents, all materials in a filled package may not be visible. The examiner should view as much of the contents as possible by looking into the box from different angles, and making use of inspection equipment such as mirrors, boroscopes, etc. as available.

2.7.6 Verify that visible internal structure of box is undamaged.

2.7.7 Sheets of wet-strength polypropylene/pulp super absorbent fabric have been placed in the bottom of the box or that one 50 lb. bag of uncalcined diatomaceous earth has been added and spread evenly in the bottom of the box.

2.7.8 If the box contains soil, wet-strength polypropylene/pulp super absorbent fabric or one 50 lb. bag of uncalcined diatomaceous earth has been added in alternating layers accounting for moisture level of soil.

2.7.9 Complete "Waste Certification Wood Box Examination Filling," QAC-881206-1 (Attachment E).

2.8 Monitoring Wood Box Closure Activities

Wood box closure activities shall be monitored occasionally to verify compliance. Results of the monitoring shall be documented on a check list and shall verify the following:

2.8.1 Plastic is folded over contents of box.

2.8.2 Form FMPC-CONT-1945-XX, "Item Production/Certification/Identification" card (W-65 Card, Attachment C) is filled out properly.

2.8.3 No moisture is visible on either the inside or the outside of the box.

2.8.4 RTW Silicone Adhesive, or equivalent, has been applied in a continuous bead (1/4 inch minimum) between lid and box.

2.8.5 Box is banded vertically with three 1-1/4 inch metal bands, one band on each end of the box and one in the middle of the box.

2.8.6 Box lid shall be fastened using ten penny nails on 3 inch centers and two sixteen penny galvanized nails on each side panel into two inch by four inch on top panel (8 places) providing proper closure.

2.8.7 Box does not exceed 5000 pounds gross weight.

3511

2.8.8 Check for damage to the box and lid. No holes, cracks, or deterioration (i.e. rot) which would permit leakage or lessen the structural integrity of the box are acceptable.

2.8.9 Complete "Waste Certification Wood Box Examination Filled Box," QAC-881206-2 (Attachment F).

2.9 Examination of Metal Boxes Prior to Filling

2.9.1 Metal box examination by Certification prior to filling is not required but should be performed on a monitoring basis. Criteria for examination shall include as a minimum:

a. Metal box must be a light color, usually white for Uranium contaminated rubble, gray for Thorium contaminated rubble.
b. Containers must be clean and empty.
c. Each container shall be well constructed of steel with all seams adequately welded.
d. The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.
e. The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.9.2 For all box designs having drain plugs, verify that box has been checked for a drain plug, and if found the drain plug has been tightened.

a. A red dot on the lower left hand front of the box shall indicate that the plug has been tightened.
b. A black dot on the lower left hand front of the box shall indicate that there is no drain plug.
c. All metal boxes shall have either a red or black dot marked.

2.10 Examination of Metal Boxes at Closure After Filling

2.10.1 Metal box must be a light color, usually white for Uranium contaminated rubble, gray for Thorium contaminated rubble.

2.10.2 Containers must be clean.

2.10.3 Each container shall be well constructed of steel with all seams adequately welded.

2.10.4 The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.

2.10.5 The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.10.6 For all box designs having drain plugs, verify that box has been checked for a drain plug, and if found the drain plug has been tightened.

a. A red dot on the lower left hand front of the box shall indicate that the plug has been tightened.
b. A black dot on the lower left hand front of the box shall indicate that there is no drain plug.
c. All metal boxes shall have either a red or black dot marked.

2.10.7 If container has been observed during loading operation ensure that wet-strength polypropylene/pulp super absorbent fabric or uncalcined diatomaceous earth is properly placed in and around the container so that all moisture is absorbed and no free liquid is visible.

2.10.8 If steel boxes are used as overpack containers for previously inspected containers, no further inspection of the contents is required.

2.10.9 Examine container at closure as follows :

a. Verify form FMPC-CONT-1945-XX (W-65 Card, Attachment C) is completed accurately.
b. Verify that Radioactive material markings (2 sides) and FMPC container number markings are present and legible.
c. Verify that all unnecessary marking have been removed or covered.
d. Verify that gross weight does not exceed 6,000 pounds.
e. Verify marked gross weight value is consistent with shipment paperwork.
f. Verify that a foam rubber or similar type gasket is on the sealing surface of the lid, or the lid is sealed with a durable sealant.
g. Verify that lid is properly placed on the box.
h. Verify locking pins required for the container are in place with the locking notches below the straps and fully engaged to full thickness of strap over entire locked surface edge of notch.
i. If bolted retainer ring is on, verify all bolts are securely in place.
j. Verify the lid is secured with two 1-1/4" steel straps.

2.10.10 For boxes filled with construction rubble, complete the "Construction Rubble Examination Metal Boxes" checklist, QAC-881206-3 (Attachment G).

2.11 <u>Examination of Sea/Land Cargo Containers Prior to Filling</u>

2.11.1 Sea/Land container examination by Certification prior to filling is not required but should be performed on a monitoring basis. Criteria for examination shall include as a minimum:

2.11.1.1 Containers must be clean and empty.

2.11.1.2 Each container shall be well constructed of steel with all seams adequately welded.

2.11.1.3 The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.

2.11.1.4 The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.11.1.5 Verify a tare weight is marked on the container.

2.11.1.6 Verify that a 1/4" minimum continuous bead of RTW Silicone Adhesive Sealant, or equivalent, has been applied on all seams and corners of the container interior.

2.11.1.7 Verify that the container floors have been lined with wet-strength polypropylene/pulp super absorbent fabric, blotter paper, or uncalcined diatomaceous earth.

2.11.1.8 Verify that the absorbent fabric, blotter paper or uncalcined diatomaceous earth has been covered with a 0.006 mil thick plastic sheet that extends at least 36 inches up each side of the container.

2.11.1.9 Verify that plywood has been placed on the container floor and up to four feet in height on all sides. If container is top loading Sea/Land container, verify that the entire floor and sides are lined with plywood.

2.11.1.10 Verify that all container outside markings not related to the load have been removed.

2.11.1.11 Verify that a prohibited materials list has been attached to the container in a visible location.

2.11.1.12 After the container has been filled, verify that the back ledge of the container is clean.

2.11.1.13 Verify that the lid/door opening has been lined with 0.006 mil thick plastic or similar material to a height of 18 inches.

2.11.1.14 Verify that the load inside the container has been secured with plywood and 2" X 4" wood, or other similar type materials.

2.11.1.15 Verify that all doors and around all sealing surfaces have been caulked with RTW Silicone Adhesive Sealant, or the equivalent.

2.12 <u>Examination of Sea/Land Cargo Containers at Closure After Filling</u>

2.12.1 Each container shall be well constructed of steel with all seams adequately welded.

2.12.2 The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.

2.12.3 The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.12.4 If Sea/Land container has been observed during loading operation ensure that wet-strength polypropylene/pulp super absorbent fabric or uncalcined diatomaceous earth is properly placed in and around the container so that all moisture is absorbed and no free liquid is visible.

2.12.5 Examine Sea/Land containers at closure as follows :

a. Verify form FMPC-CONT-1945-XX (W-65 card, Attachment C) is completed accurately.
b. Verify that all unnecessary marking have been removed or covered.
c. Verify that caulking is around all doors and around all sealing surfaces, and that the metal doors are securely closed, and two metal bands secure the two door latches together.
d. If Sea/Land container is top loading, verify that a foam rubber or similar type gasket is on the sealing surface of the lid, or the lid is sealed with a durable sealant.
e. Verify that a prohibited materials list has been attached to the container in a visible location.

2.13 Examination of Baled Trash

2.13.1 Examine baled trash as follows:

a. Each bale shall have minimum of six (6) bands or straps for binding.
b. Free liquids are prohibited. Be watchful of liquids in pockets of water in a bags. Condensation in plastic bags is acceptable unless excessive.
c. Prohibited materials are not allowed in accordance with "Prohibited Materials List" (Attachment A).

NOTE: Reject bale if prohibited materials or suspicious items (i.e. asbestos) are present, and mark W-65 card accordingly.

d. "Bale Examination" checklist (Attachment H) is completed.
e. Using a barrel grab lift and turn the bale to check underside.
f. Ensure that form FMPC-CONT-1945-XX (W-65 card, Attachment C) is complete and accurate for each bale.
g. Initial and date the W-65 card after examining the card and bale.

NOTE: If bale is designated wet (to be sent to Plant 1 for drying) initial card but note that bale is wet (unacceptable for shipment).Wet bales will be recertified at Plant 1 prior to packaging for shipment.

h. Make entry in log book at the baler.
i. Enter bale inspection on computer in Waste Packaging Office.

3.0 REFERENCES

3.1 NVO-325, Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements
3.2 FMPC-503, FMPC Spill Incident Reporting and Cleanup
3.3 FMPC-704, Minor Event Reporting System
3.4 EQP-1.05, Abbreviations, Acronyms, and Definitions
3.5 FMPC-706, Deviation and Corrective Action Reporting
3.6 EQP-9.01, Designation, Preparation, Storage and Maintenance of Quality Documents
3.7 EQP-12.04, Certification of Loading and Shipment of Low-Level Radioactive Waste

4.0 ATTACHMENTS

4.1 Attachment A - Prohibited Materials List
4.2 Attachment B -Waste Certification Examination Report, "Drum Filling"
4.3 Attachment C -Item Production/Certification/Identification Card
4.4 Attachment D -Waste Certification Examination Report, "Prior to Transfer"
4.5 Attachment E -Waste Certification Wood Box Examination Filling
4.6 Attachment F -Waste Certification Wood Box Examination Filled Box
4.7 Attachment G - Construction Rubble Examination Metal Boxes
4.8 Attachment H -Bale Examination

3511

PROHIBITED MATERIALS

Nonradioactive Material

Pressurized Vessels

Explosives

Radioactive Gases

High-Level Waste

Pyrophoric Materials

Toxic or Poisonous Materials

Liquid Metals

Flammable Substances

Alkaline Metals

Reactive Materials (could cause fire)

Liquid Organic Waste or Waste that contains any free liquid

Ashes, Dry Powders or Respirable Fines (unless immobilized or a double containment package is used)

If the Waste is Ionized or Immobilized the pH must be greater than 4

3511

WASTE CERTIFICATION EXAMINATION REPORT "DRUM FILLING"

WASTE CERTIFICATION
EXAMINATION REPORT
"DRUM FILLING"

DATE: _____ LOCATION: _____

CERTIFICATION SPECIALIST MATERIAL: _____

_____

LOT NO.: _____

DRUM #	INSIDE DRUM	OUTSIDE DRUM	NO LIQUIDS	I.S. LID	MTL. OK	SEAL OK .	W-65 COMP.	INITIAL ALL OK

Deviations Noted: Yes_____ No_____

Deviation Corrective Action Completed :

Production Supervisor: _____ Date: _____

Waste Certification Specialist: _____ Date: _____

QAC-881115-5, Rev.1 (09/23/89)

STEP 6.

Attachment C
Page 1 of 1

3511

ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION CARD

CARD XX ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION 129702

P. O. NO.	SOURCE	CLASS	MATERIAL TYPE	LOT SEQUENCE NO.	DATE MO	DATE DAY	DATE YEAR	SHIFT	BADGE NO.	PACKAGE NO.

SEAL NUMBER	SEAL DATE MONTH	SEAL DATE DAY	SEAL DATE YEAR

WASTE DESCRIPTION AND COMMENTS

PACKAGE TYPE	
PACKAGE SIZE	

PACKAGE PHYSICAL CERTIFICATION	YES	NO
EMPTY CONTAINER AT START		
RUST HOLES OR DENTS		
MATERIAL IS AS CODED		
PROHIBITED MATERIALS		
LIQUIDS IN CONTAINER		
MINIMUM OF VOID SPACE		
PACKAGE SECURED		
DRAIN PLUG SECURED		

PLANT	PROD. MBA
PLANT TO	MBA TO

GROSS WEIGHT

TARE WEIGHT

NET WEIGHT

GENERATOR SIGNATURE

SUPERVISOR SIGNATURE DATE

FMPC-CONT-1945-EX (REV 12-19-88)

*U.S. GPO: 1990-749-781

3511

WASTE CERTIFICATION EXAMINATION REPORT "PRIOR TO TRANSFER"

WASTE CERTIFICATION
EXAMINATION REPORT
"PRIOR TO TRANSFER"

(Rev. 8/31/88)

DATE:_____ LOCATION:_____

CERTIFICATION SPECIALIST MATERIAL:_____

_____

LOT NO.:_____ _____

DRUM #	O.S. DRUM	O.S. LID	BOLT	RING	DRUM I.D.	WTS. OK .	W-65 (10%)	ALL OK

Deviations Noted: Yes_____ No_____

Deviation Corrective Action Completed :

Production Supervisor: _____ Date:_____

Waste Certification Specialist:_____ Date:_____

QAC-881115-3, Rev. 1 (08/31/89)

3511

WASTE CERTIFICATION WOOD BOX EXAMINATION FILLING

WASTE CERTIFICATION
WOOD BOX EXAMINATION
FILLING

INFORMATION

MTL. TYPE: _____ BOX S/N(): _____

REQUESTOR: _____ LOCATION : _____

EXAMINATION (Waste Certification)

DATE CHECKED	STATUS	INITIALS

CERTIFICATION (Waste Certification)

Deviation Reportable: YES_____ NO_____

Nonconformance Record Number:_____

Date Deviation Corrected:_____

I hereby certify the above woodbox has been examined to the best of my knowledge, as defined by the above criteria, requirements of this procedure, & SOP 20-C-601.

Signed:_____
(Waste Certification)

Date: _____

QAC-881206-1, Rev. 1 (12/15/88)

3511

WASTE CERTIFICATION WOOD BOX EXAMINATION
FILLED BOX

WASTE CERTIFICATION
WOOD BOX EXAMINATION
FILLED BOX

INFORMATION

MIL. TYPE: _____ BOX S/N(): _____

GENERATOR: _____ LOCATION : _____

EXAMINATION

	INITIALS
1. Check for damage to the box and lid. Verify no holes, cracks or defects which would permit leakage or lessen the structural integrity of the box.	_____
2. Verify clarity of shipment number and container number.	_____
3. Verify Gross Weight is marked on each box.	_____
4. Verify three metal bands are secure and located vertically with one in the center of the box and the remaining two equidistant from the center, one on each side, or verify that large boxes are secured with four evenly spaced bands.	_____
5. Verify no standing water on the box.	_____
6. Verify W-65 card information matches information marked on box.	_____
7. Verify the existence of the Low Specific Activity (LSA), Reportable Quantity (RQ), label identification, as applicable.	_____
8. Verify the existence of durable sealant compound between the lid and the box.	_____
9. Verify the existence of nails, attaching the lid to the box.	_____

CERTIFICATION (Waste Certification)

Deviation Reportable: YES_____ NO_____

Nonconformance Record Number:_____

Date Deviation Corrected:_____

I hereby certify the above woodbox has been examined to the best of my knowledge, as defined by the above criteria, requirements of this procedure, & SOP 20-C-601.

Signed:_____
(Waste Certification)

Date: _____

QAC-881206-2, Rev. 2 (12/15/88)

3511

CONSTRUCTION RUBBLE EXAMINATION METAL BOXES

CONSTRUCTION RUBBLE EXAMINATION
METAL BOXES

RECORD :

Container S/N : _____ Date : _____

PRIOR TO LOADING:

1. Verify that the container has no holes, tears or creases. _____
2. Verify drain plug is installed, if applicable _____
3. Verify the container lid is not damaged (including the gasket). _____
4. Verify that one bag of Uncalcined diatomaceous earth or absorbent pad is placed on top of soil. _____
5. Only correct materials are placed in container. _____
6. No free liquids are visible in the container. _____
7. Verify only unsaturated wood is used as topping-off material. _____
8. Verify gross weight of container does not exceed 6000 lbs. _____
9. Verify caulking/gasket, banding (2) and pins are all in place. _____
10. Verify the data record (W-65) is filled out correctly. _____

Note : Any deviations from the checklist will require a deviation report to be issued and a Nonconformance tag placed on the container. The deviation must be resolved prior to removal of the Nonconformance tag.

Deviation Noted: Yes_____ NO_____

I hereby certify that the above checklist has been completed and witness that the above items are correct to the best of my knowledge.

Signed : _____ Date : _____
(Waste Certification)

QAC-881206-3, Rev. 1 (12/08/88)

3511

BALE EXAMINATION

BALE EXAMINATION

BALE NUMBER_____ DATE_____

EXAMINATION:

1. Verify correct materials are placed in bale where visible. _____

2. No visual evidence of free liquids or seepage from bale, nor is material in bale saturated to the extent that seepage could be expected during bundling, handling and transport. _____

3. Verify the data record (W-65) is filled out correctly. _____

NOTE: Any deviations from the checklist will require a deviation report to be issued and a Nonconformance tag placed on the container. The deviation must be resolved prior to removal of the Nonconformance tag.

Deviation Noted: Yes_____ No_____

I hereby certify that the above checklist has been completed and witness that the above items are correct to the best of my knowledge.

Signed:_____ Date:_____
(Waste Certification)

FEMP WESTINGHOUSE ENVIRONMENTAL MANAGEMENT COMPANY OF OHIO SITE SERVICES DOCUMENT PROGRAM		Page 1 of 27 Revision No. 1	APR 1992
SITE SERVICES PROCEDURE	LOW LEVEL RADIOACTIVE WASTE (LLRW) SHIPMENT PREPARATION	SOP 1-C-602 AREA: Plants 1 & 6	
Authorization: R. L. Gardner, Facilities and Warehousing	Supersedes: 1-C-602, 08-21-90	Issue Date: 11-12-91	

1.0 PURPOSE

This document provides the procedure for preparing LLRW for shipment offsite.

2.0 APPLICABILITY

This procedure shall apply to LLRW received in Plants 1 and 6 for offsite shipment.

3.0 RESPONSIBILITIES

3.1 Supervisors shall be responsible for the following:

3.1.1 Coordinating and notifying supporting organizations of assistance as required per this SOP.

3.1.2 Determining disposition of items as defined in this SOP.

3.1.3 Ensuring packaging materials are available for operators.

3.1.4 Designating area for rejected containers.

3.1.5 Notifying shipment coordinator of rejected container(s).

3.1.6 Contacting Industrial Hygiene or Radiological Safety to determine the appropriate respiratory protection for the operation being performed.

3.1.7 Obtaining approval for the use of paints, sealants, caulking, or absorbents to be used.

3.1.8 Providing operators with the required respiratory protection and reviewing Material Safety Data Sheets (MSDS), as applicable, with operators.

3.1.9 Ensuring that personnel are qualified per the established training requirements identified by the Department/Staff Manager.

3.1.10 Authorizing waste shipments.

3.2 Radiation Safety Technicians (RST) shall be responsible for surveying containers classified as low level radioactive waste.

3.3 Waste Shipment Coordinators shall be responsible for preparing and coordinating documentation required for a waste shipment.

3.4 Operators shall be responsible for complying with this SOP.

3.0 RESPONSIBILITIES (cont.)

3.5 **Environmental Compliance and Quality Assurance (EC&QA)** shall be responsible for the following:

3.5.1 Certifying containers for shipment.

3.5.2 Issuing a deviation report for damaged containers.

3.6 **Materials Control and Accountability (MC&A)** shall be responsible for providing shipping documentation.

4.0 DEFINITIONS

4.1 Waste Generator - Organization (point of generation) at which waste is originated.

4.2 Transport Index - A dimensionless (rounded up to the first decimal place) number placed on the label of a package to designate the degree of control to be exercised by those handling the package. The number is from the higher of the two following derivations: (1) the maximum radiation level (in mR/h) at one meter from the package; and (2) for fissile Class II and III shipments, an index is calculated for criticality control purposes.

5.0 REFERENCES

None

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS

6.1 Safety glasses with side shields shall be worn unless other eye protection is specified by IRS&T.

6.2 Respiratory protection provided by the supervisor shall be worn when required by IRS&T.

6.3 Leather-palmed gloves shall be worn to protect the hands from rough material and contamination.

6.4 HEPA type filter vacuum cleaners or an IRS&T approved vacuum system with a current DOP test sticker properly affixed to vacuum shall be used for cleaning.

6.5 Employees shall have reviewed and be familiar with the information contained in Material Safety Data Sheets for the chemicals/hazardous materials being used.

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS (cont.)

6.6 Any circumstance which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake to IRS&T Radiological Safety Section for evaluation. The involved personnel shall report to the Urine Sampling Station at the end of their shift to complete a Incident Investigation Report (IIR) (Form FMPC-ES&H-1458), and submit an incident urine sample. The involved personnel shall also report to the Urine Sampling Station at the start of their next shift to submit a followup urine sample. Employees are responsible for complying with additional requirements as specified by the Radiological Safety Section.

NOTE: Warnings, cautions, and notes precede the Step/Item to which they apply.

7.0 PROCEDURE

7.1 Drum Preparation

7.1.1 Move drum for shipment to Waste Operations Staging Area.

7.1.2 Check the drum for damage (such as dents, rust, holes, cracks, water leaks, and defects).

7.1.2.1 If drum is damaged, mark damaged container with a red "X" on the lid.

7.1.2.2 Contact supervisor for area of disposition.

7.1.2.3 Move damaged drums to area designated by supervisor.

7.1.3 Check outside of drums for moisture.

7.1.3.1 If moisture is found, wipe the drum with a rag.

7.1.3.2 Dispose of rag in a designated container.

7.1.4 Torque lock ring bolt to 45($\pm$5) ft-lbs using a certified break-away torque wrench.

7.1.5 Tighten the locking nut against the threaded flange (right flange) (See Figure 1) by hand.

7.1.6 Tighten the locking nut 1/4 turn using a wrench.

7.0 PROCEDURE (cont.)

7.1.7 Dab the bolt with red paint as a visual code designating that tightening has been completed.

7.1.8 Thread safety wire through hole in either the bolt head or threaded portion of bolt and around threaded portion of bolt ring (See Figure 1).

7.1.9 Secure the wire.

NOTE: Waste packages shall be marked with the appropriate thirteen alpha-numeric character waste stream identification number, log number and a six digit numeric character container identification number unique to each shipment.

NOTE: The shipment log number, container identification number, and waste stream identification number shall be marked in one inch (minimum) letters using black waterproof ink or paint.

7.1.10 Notify supervisor to request the Waste Shipment Coordinator to assign shipment log number, container identification number and waste stream identification number.

NOTE: The drum number shall be used as the container identification number.

NOTE: Container identification numbers less than six digits are to be preceded by zeros (e.g. Container #25432 would be changed to #025432, Container #5 would be changed to #000005)

7.1.11 Stencil or mark assigned shipment log number, container identification number, and waste stream identification number in 1-1/2 inch (minimum) block or legible letters with enamel paint on the top center of container (See Figure 2).

7.1.12 Touch-up paint scratches on container.

7.1.13 Notify MC&A to write shipment document using a "LLRW Shipment Preparation Worksheet", Form FS-F-3470.

7.1.14 Notify supervisor that an RST is required to survey container.

7.1.15 Place a plastic cover over the drum after the survey is complete.

7.1.16 Move drum to holding area.

7.1.17 Notify MC&A of drum relocation.

7.0 PROCEDURE (cont.)

7.2 Wooden Box Preparation

7.2.1 Notify MC&A of boxes requiring transfer to staging area for shipping preparation.

7.2.2 After MC&A has completed documentation to release box for shipping preparation, move box for shipment to applicable staging area.

7.2.3 Check the box for damage such as holes, cracks, water leaks, and defects.

NOTE: MC&A shall complete documentation to release box from to storage.

7.2.3.1 If box is damaged, mark box with a red "X" on the side.

7.2.3.2 Contact supervisor for area of disposition.

7.2.3.3 Move damaged boxes to area designated by supervisor.

7.2.3.4 Notify MC&A of damaged box requiring transfer to storage.

7.2.4 Check inside and outside of box for moisture.

7.2.4.1 If moisture is present on outside of container, remove moisture with rag and dispose of rag in designated container.

7.2.4.2 If moisture is inside container, add uncalcined diatomaceous earth or wet-strength, polypropylene-pulp, super-absorbent fabric.

7.2.5 Obtain the "Item Production/Certification/Identification" (65 Card), Form FMPC-CONT-1945-XX from the Waste Shipment Coordinator.

7.2.6 Ensure information corresponds to box identification and contents.

7.2.6.1 Notify supervisor if card is not complete.

7.2.6.2 Return the card to Waste Shipment Coordinator.

NOTE: Supervisor shall specify the scale to be used.

7.2.7 Using forklift, move box to scale for weighing.

7.0 PROCEDURE (cont.)

7.2.8 If not previously completed, inspect the scale to be used in accordance with the SOP applicable to the area.

7.2.9 Using the forklift, move the box onto the scale.

7.2.10 Weigh the box.

7.2.11 Stamp the weight on 65 card.

7.2.12 Apply GE-RTV Silicone adhesive (or equivalent) in a continuous bead (1/4 inch minimum to 1/2 inch maximum) on top edges of the vertical 3/4 inch panel lid.

7.2.13 Place lid on box.

7.2.14 Secure lid using 10 penny nails on three inch centers and two 16 penny galvanized nails on side panel into each 2 inch x 4 inch on top panel (eight places).

7.2.15 Band the box vertically with three 1-1/4 inch metal bands by placing one band on each end of the box and one in the middle (See Figure 3).

NOTE: Waste packages shall be marked with the appropriate thirteen alpha-numeric character waste stream identification number, log number and a six digit numeric character container identification number unique to each shipment.

7.2.16 Notify the supervisor to request the Waste Shipment Coordinator to assign shipment log number and waste stream identification number.

NOTE: The box serial number shall be used as the container identification number.

NOTE: Container identification numbers less than six digits are to be preceded by zeros (e.g. Container #25432 would be changed to #025432, Container #5 would be changed to #000005).

7.2.17 Stencil or mark assigned shipment log number, container identification number, waste stream identification number, and gross weight in 1 1/2 inch (minimum) block or legible letters with waterproof ink or paint on the top center and two sides of the box (See Figure 4).

7.2.18 Notify MC&A to write shipment document using a "LLRW Shipment Preparation Worksheet".

7.0 PROCEDURE (cont.)

7.2.19 Notify supervisor that an RST is required to survey box.

7.2.20 Move box to holding area and cover with tarp, or equivalent cover, after survey is complete.

7.3 Metal Box/Type A-7A Metal Box Preparation

7.3.1 Notify MC&A of boxes requiring transfer to staging area for shipping operation.

7.3.2 After MC&A completes documentation to release box for shipping preparation, move metal box for shipment to Waste Operations Staging Area.

7.3.3 Break temporary seal and remove lid.

7.3.4 Check inside and outside of box for moisture.

7.3.4.1 If moisture is present on container outside, remove with rag.

7.3.4.2 Dispose of rag in designated container.

7.3.4.3 If moisture is inside container, add uncalcined diatomaceous earth or wet-strength, polypropylene-pulp super-absorbent fabric.

7.3.5 Check the container for damage such as dents, rust, holes, cracks, water leaks, and defects.

7.3.5.1 If container is damaged, mark damaged container with a red "X" on the side.

7.3.5.2 Contact supervisor for area of disposition.

7.3.5.3 Move damaged containers to area designated by supervisor.

7.3.6 Using forklift, place box on stand.

7.3.7 Remove truck forks.

7.3.8 Check bottom for dents, holes, or stress cracks.

7.3.8.1 If a dent is deep or metal protruding more than one inch from box surface, reject the box.

7.0 PROCEDURE (cont.)

7.3.9 Check the bottom of the box for a drain hole/plug.

7.3.9.1 If there is a drain hole but no plug, contact supervisor.

7.3.9.2 If a drain hole/plug is present, tighten the drain plug.

7.3.9.3 Paint red dot on opposite sides of box to indicate plug has been tightened.

7.3.9.4 If drain hole/plug is not present, paint a black dot on the opposite sides of box to indicate that the box has been checked for drain holes.

7.3.10 Check each runner on box for two drain holes.

7.3.10.1 If drain holes are not present, drill holes in runner.

7.3.11 Place a check mark next to red or black dot to indicate that runners have been checked.

7.3.12 Obtain the "Item Production/Certification/Identification" (65 Card), Form FMPC-CONT-1945-XX from Waste Shipment Coordinator.

7.3.13 Ensure information corresponds to box identification and contents.

7.3.13.1 Notify supervisor if card is not complete.

7.3.13.2 Return card to Waste Shipment Coordinator.

7.3.14 Ensure gasket on lid is in place.

7.3.15 Check the gasket for damage.

7.3.15.1 If gasket is damaged, install a new gasket or apply GE-RTV silicone adhesive (or equivalent) in a continuous bead (1/4 inch minimum to 1/2 inch maximum) on top edges of the vertical 3/4 inch panel lid.

7.3.16 Using forklift, position lid on box.

NOTE: Supervisor shall specify the scale to be used.

7.3.17 Using forklift, move box to scale for weighing.

7.3.18 If not previously completed, inspect the scale to be used in accordance with the SOP applicable to the area.

7.0 PROCEDURE (cont.)

7.3.19 Using the forklift, move the box onto the scale.

7.3.20 Weigh the box.

7.3.21 Stamp the weight on 65 card.

NOTE: Waste packages shall be marked with the appropriate thirteen alpha-numeric character waste stream identification number and a six digit numeric character container identification number unique to each shipment.

7.3.22 Notify the supervisor to request the Waste Shipment Coordinator to assign shipment log number and waste stream identification number.

NOTE: The box serial number shall be used as the container identification number.

NOTE: Container identification numbers less than six digits are to be preceded by zeros (e.g. Container #25432 shall be changed to #025432, Container #5 would be changed to #000005).

7.3.23 Stencil or mark assigned shipment log number, container identification number, gross weight, and waste stream identification number in one inch (minimum) block or legible letters with waterproof ink or paint on the top center and two sides of the box (See Figure 5).

7.3.24 Notify MC&A to write shipment document using a "LLRW Shipment Preparation Worksheet", Form FS-F-3470.

7.3.25 Close metal box in accordance with box type per 7.11.

7.3.26 Notify supervisor that an RST is required to survey box.

7.3.27 Move box(s) to holding area.

7.3.28 Notify MC&A of box relocation.

7.4 Sea/Land Container Preparation

7.4.1 Notify MC&A of containers requiring shipping preparation.

7.4.2 After MC&A completes documentation to release containers for shipping preparation, check the container for damage (such as dents, rust, holes, cracks, water leaks, and defects).

7.0 PROCEDURE (cont.)

NOTE: MC&A shall complete documentation to release box to storage.

7.4.2.1 If a container is damaged, mark a red "X" on the door.

7.4.2.2 Contact the supervisor for disposition.

7.4.2.3 Notify MC&A of damaged container requiring transfer to storage.

7.4.3 Inspect contaminated doors and caulking for water.

7.4.3.1 If water is found, notify the supervisor.

7.4.4 Obtain the "Item Production/Certification/Identification" (65 Card), Form FMPC-CONT-1945-XX from the Waste Shipment Coordinator.

7.4.5 Ensure information corresponds to container identification.

7.4.5.1 Notify supervisor if card is not complete.

7.4.5.2 Return card to Waste Shipment Coordinator.

NOTE: Waste packages shall be marked with the appropriate thirteen alpha-numeric character waste stream identification number and a six digit container identification number unique to each shipment.

7.4.6 Notify supervisor to request the Waste Shipment Coordinator and MC&A to assign a shipment log number, container identification number, and waste stream identification number.

7.4.7 Stencil or mark assigned shipment log number, container identification number and waste stream identification number in one inch (minimum) black or legible letters with waterproof ink or paint on the sides of container as shown in Figure 6.

7.4.7.1 For containers with seven digit numbers, change the number to six digits by deleting the suffix (e.g. 178936-1 shall be 178936).

7.4.8 Notify supervisor that an RST is required to survey container.

7.4.9 Write shipment document using a "LLRW Shipment Preparation Worksheet".

7.0 PROCEDURE (cont.)

7.5 Container Verification

7.5.1 Notify supervisor that the shipment documentation requires completion by the Waste Shipment Coordinator.

7.5.2 After documentation verification is complete, move the shipment to staging area for final preparation.

7.5.3 Notify supervisor that a smear test of the container is required within
R the time period specified by IRS&T.

7.6 Drum Shipment Inspection

7.6.1 Check drum for damage such as dents, rust, holes, cracks, water leaks, and defects.

7.6.1.1 If a drum is damaged, mark the lid with a red "X".

7.6.1.2 Stop the shipment.

7.6.1.3 Notify the supervisor.

7.6.1.4 Move the damaged drum to the area designated by supervisor.

7.6.1.5 Notify MC&A of drum relocation.

NOTE: The shipment log number, container identification number, and waste stream identification number shall be marked in one inch block (minimum) letters using black waterproof ink or paint.

7.6.2 Check that the shipment log number, container identification number, and waste stream identification number are present and legible.

7.6.2.1 If not, notify the supervisor.

7.6.3 Check that the gross weight is marked in two inch (minimum) letters on each drum.

7.6.3.1 If not, notify the supervisor.

7.6.4 Ensure that the jam nut is locked to opposite side of bolt head with flat side against ring harness.

7.6.5 Ensure safety wire is installed on bolt.

7.0 PROCEDURE (cont.)

7.6.6 Check bolt ring/drum seal to ensure proper seating of locking ring on drum.

7.6.7 Touch-up paint scratches.

7.6.8 Check for moisture on outside of drum.

7.6.8.1 Using a rag, remove moisture.

7.6.8.2 Dispose of rag in designated container.

7.6.9 Stencil the LSA (Low Specific Activity), LQ (Limited Quantity) or RQ (Reportable Quantity) on drum or affix appropriate label.

7.7 Wooden Box Shipment Inspection

7.7.1 Check box for damage (such as holes, cracks, water leaks, or defects).

7.7.1.1 If a box is damaged, stop shipment.

7.7.1.2 Mark the side of box with a red "X".

7.7.1.3 Notify supervisor.

7.7.1.4 Move the damaged box to area designated by supervisor.

7.7.1.5 Notify MC&A of box relocation.

NOTE: The shipment log number, container identification number, and waste stream identification number shall be marked in one inch (minimum) letters using black waterproof ink or paint.

7.7.2 Check that the shipment log number, container identification number, and waste stream identification number are present and legible.

7.7.2.1 If data is missing or illegible, notify the supervisor.

7.7.3 Ensure gross weight is marked in two inch (minimum) letters on each box.

7.7.3.1 If not, notify the supervisor.

7.7.4 Ensure that three metal bands are secure.

7.7.5 Check that the bands are located vertically with one in the center and the remaining two equidistant from the center.

7.0 PROCEDURE (cont.)

7.7.6 Check for moisture on the outside of the box.

7.7.6.1 Using a rag, remove moisture.

7.7.6.2 Dispose of rag in designated container.

7.7.7 Stencil LSA, LQ or RQ on box or affix appropriate label.

7.8 Metal Box Shipment Inspection

7.8.1 Check for damage such as dents, rust, holes, cracks, water leaks, and defects.

7.8.1.1 If box is damaged, mark side of box with a red "X".

7.8.1.2 Contact the supervisor for area of disposition.

7.8.1.3 Using forklift, move damaged box to area designated by supervisor.

7.8.1.4 Notify MC&A of box relocation.

7.8.2 Ensure drain plug is secure by checking for red paint dot on either side of box.

7.8.2.1 If there is no red dot, perform Step 7.3.9.

7.8.3 Ensure wedge type pins (if used) are secure.

7.8.3.1 If the locking notch of the pin is 1/4 inch or below the box strips, replace the pin.

7.8.3.2 If angle of pin is less than or greater than 90 degrees, replace the pin.

7.8.4 Ensure bolt type locking devices (if used) are secure.

7.8.5 Check that the shipment log number, container identification number, and waste stream identification number are present and legible.

7.8.5.1 If not, notify the supervisor.

7.8.6 Ensure the shipment log number, container identification number, and waste stream identification number is marked in one inch (minimum) letters with black waterproof ink or paint.

7.0 PROCEDURE (cont.)

7.8.7 Visually verify that gross weight is marked in two inch (minimum) letters on box.

7.8.8 Ensure two bands (if used) are located vertically on box, secure, and equidistant from center.

7.8.9 Touch-up paint scratches, if any.

7.8.10 Check for moisture on box.

7.8.10.1 If moisture is present, remove with a rag.

7.8.10.2 Dispose of rag in designated area.

7.8.11 Stencil LSA, LQ, or RQ on box or affix appropriate label.

7.9 Sea/Land Container Shipment Inspection

7.9.1 Check the sea/land container for structural damage such as structurally affecting dents, severe rust, holes, stress cracks, flaking paint, or water leaks).

7.9.1.1 If container is damaged, mark the door with a red "X".

7.9.1.2 Contact supervisor for area of disposition.

7.9.1.3 Move damaged container to area designated by supervisor.

7.9.2 Check for markings not pertaining to load.

7.9.2.1 Using paint, obliterate markings.

7.9.3 Check that the shipment log number, waste stream identification number, lot number, gross, tare, and net weights, and container identification number are present and legible.

7.9.3.1 If not, notify the supervisor.

7.9.4 Ensure the shipment log number, container identification number, and waste stream identification number are marked in one inch (minimum) letters with black waterproof ink or paint.

7.9.5 Ensure that gross weight is marked in two inch letters (minimum) on side of container.

7.0 PROCEDURE (cont.)

7.9.6 Check around doors and sealing surfaces for caulking.

7.9.6.1 Notify the supervisor if doors/surfaces are not caulked.

7.9.7 Ensure doors are closed.

7.9.8 Check that doors are secured by two bands.

7.9.8.1 If not, notify the supervisor.

7.9 9 Ensure that bottom edge and forklift indentations of container are clean.

7.9.10 Stencil LSA (Low Specific Activity), LQ (Limited Quantity) or RQ (Reportable Quantity) on box or affix appropriate label.

7.10 Final Documentation Prior to Loading

NOTE: The Waste Management Supervisor shall authorize the release of each shipment by signing the Waste Shipment Authorization Checklist, Form No. QA:WC:06.

NOTE: EC&QA shall affix certification sticker NV-211 to each container and authorize container.

NOTE: MC&A shall prepare a shipping order (Form FMPC-CONT-558) for nuclear material.

7.10.1 Notify supervisor that shipment is ready for loading.

7.11 Closing Metal Boxes

7.11.1 7A Type Box with Clip Style Retainer (See Figure 7)

7.11.1.1 Remove the lid edge protector from the container.

7.11.1.2 Position the container lid on edge at an angle with the bottom facing out and leaning against the container.

7.11.1.3 Install a neoprene sponge rubber gasket on the lid sealing surface.

7.11.1.4 Place the lid into position on top of the container.

7.0 PROCEDURE (cont.)

NOTE: Four clips shall be in place on each side of the container, three clips in front and three in back for a total of 14 clips.

NOTE: The clips are the primary container closing/locking devices.

7.11.1.5 Using the tool provided, install "L" clips in sequence on corners, sides, front, and back of the container.

7.11.1.6 Using a wide edged blunt chisel, bend the bottom edge of the clip locking strap inward until the strap is secured.

7.11.1.7 Install the Lid Edge Protector on the container.

7.11.1.8 Using 3/8 x 16 hex bolts, washers, and hex head elastic stop nuts, secure the edge protector on the container.

7.11.1.9 Finger tighten each hex nut.

7.11.1.10 Tighten the hex bolts until a minimum of two threads are visible beyond the nut.

7.11.2 Metal Box with Wedge Type Pins (See Figure 8)

CAUTION: **DO NOT USE PINS(S) IF THE LOCKING NOTCHES ARE 1/4 INCH OR MORE BELOW THE BOX STRAPS OR IF THE ANGLE OF PIN IS LESS THAN OR GREATER THAN 90 DEGREES.**

7.11.2.1 Insert pins through the straps located on the upper perimeter of the box so that the locking notches are below the straps.

NOTE: Metal band shall be 1-1/4 inch wide X .044 inch thick mangus P/W (paint/waxed), tensile strength of 7,610 lbs, 5.3 ft/lb, 100 lbs/coil, located equidistance from center.

7.11.2.2 Band box with two metal bands.

7.11.3 7A Type A Box with Positive Closer Bolt (See Figure 9)

7.11.3.1 Using forklift, remove lid from the container.

7.11.3.2 Install a neoprene sponge rubber gasket on the lid sealing surface.

7.11.3.3 Place the lid into position on container.

7.0 PROCEDURE (cont.)

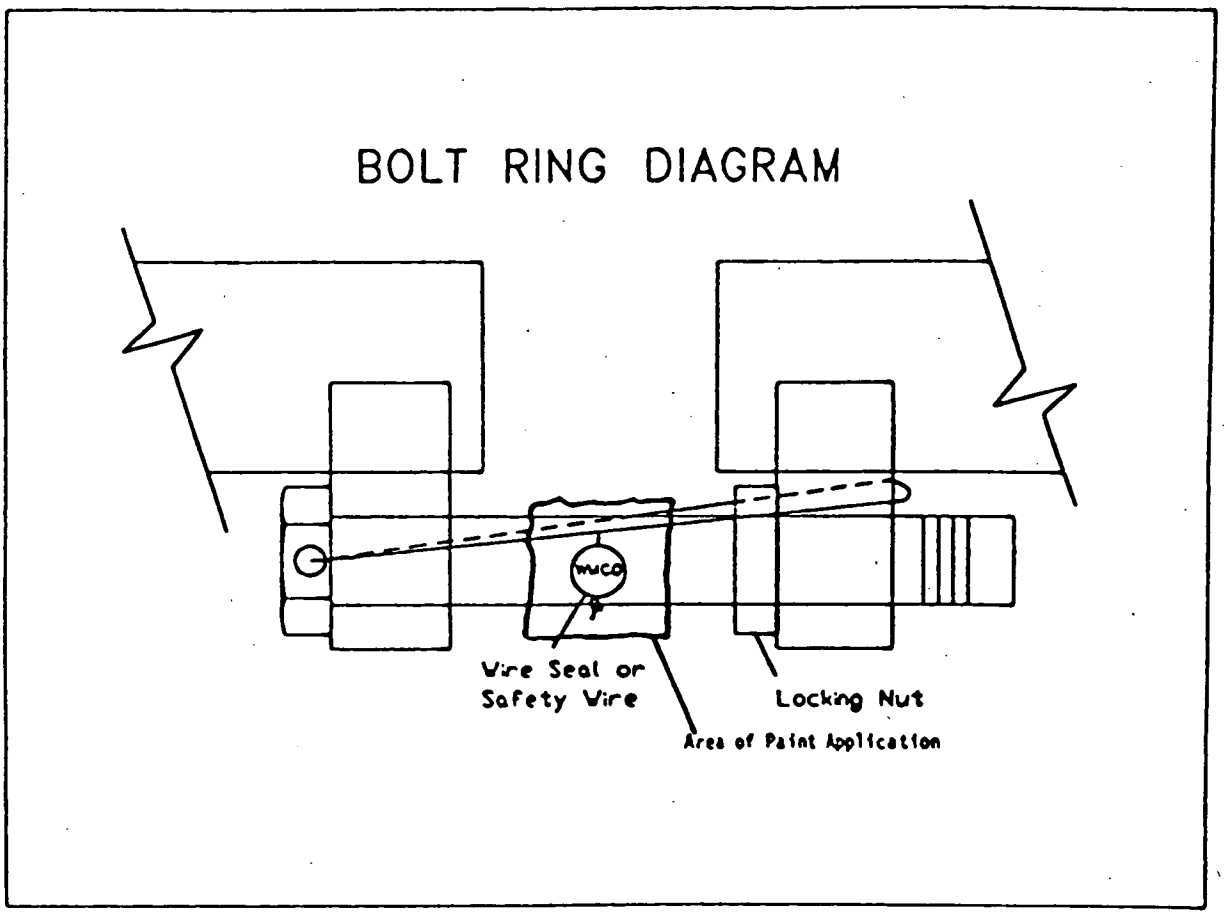
7.11.3.4 Put washers in place and insert bolt through holes in lid and lip on container per Figure 9.

7.11.3.5 Tighten bolts with impact wrench.

8.0 APPLICABLE FORMS

8.1 Form FMPC-CONT-1945-XX, "Item Production/Certification/Identification"

8.2 Form FS-F-3470, "LLRW Shipment Preparation Worksheet"



LOCK RING PAINT AND BOLT AND SAFETY WIRE INSTALLATION
Figure 1

TYPICAL CONTAINER MARKINGS & LABELS FOR OFFSITE SHIPMENT

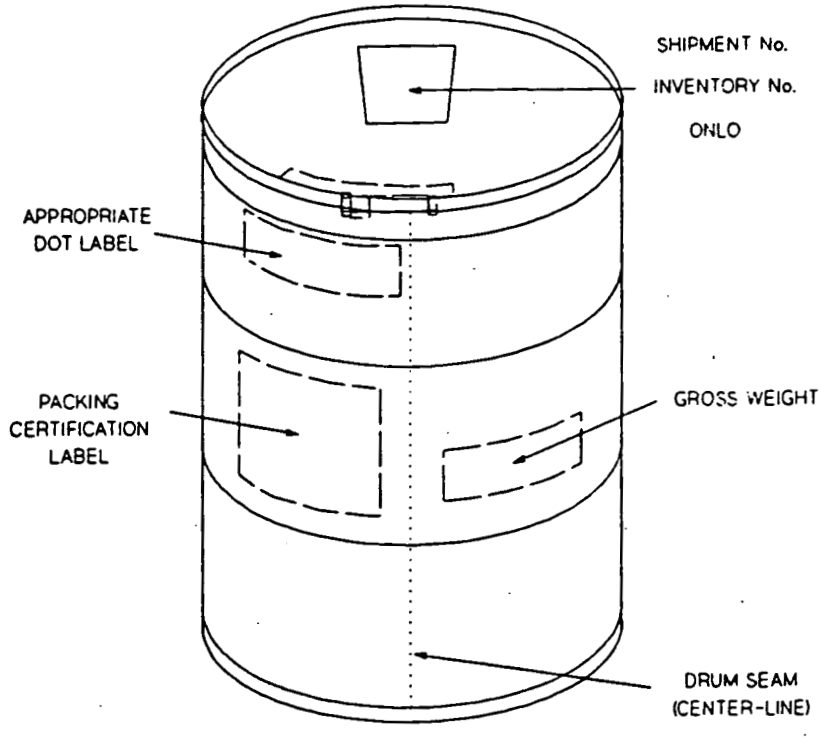
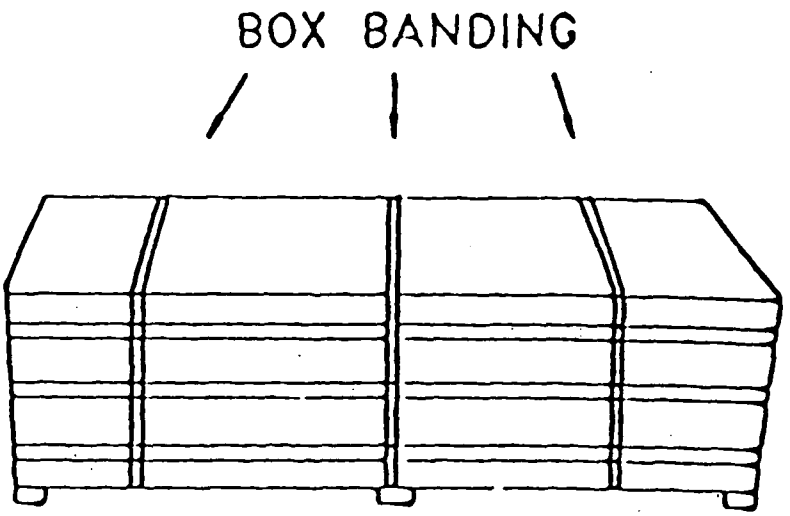


DIAGRAM OF DRUM IDENTIFICATION
Figure 2



WOODEN BOX BANDING
Figure 3

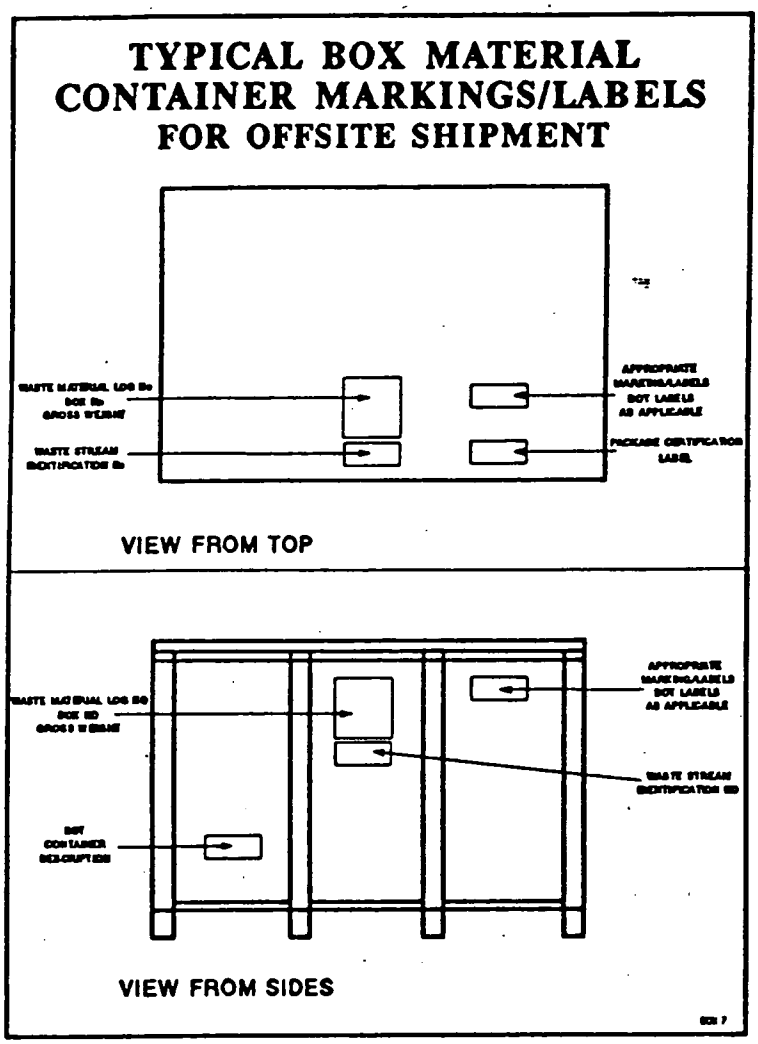


DIAGRAM OF WOODEN BOX IDENTIFICATION
Figure 4

FEMP
SITE SERVICES

CHANGE IN OPERATION

CIO NO. C92-005

Effective Date: 01/30/92

Expiration Date: 07/30/92

1. AFFECTED DOCUMENT NUMBER
1-C-602

2. AFFECTED DOCUMENT PAGE NUMBER
21

3. TITLE OR SUBJECT:

Low Level Radioactive Waste Shipment Preparation

4. OPERATION AND AREA AFFECTED:

Container Labeling/Plant 1

5. SAFETY SYSTEM INVOLVED: YES [ ] NO [X]

6. AUTHORIZATION: R. L. Gardner, Manager Facilities & Warehousing Signature on File

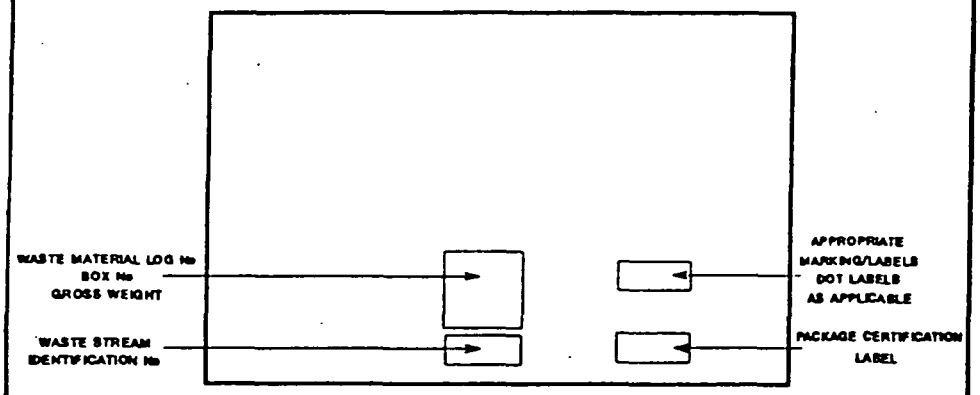
DEPARTMENT: Site Services

7. CHANGE:

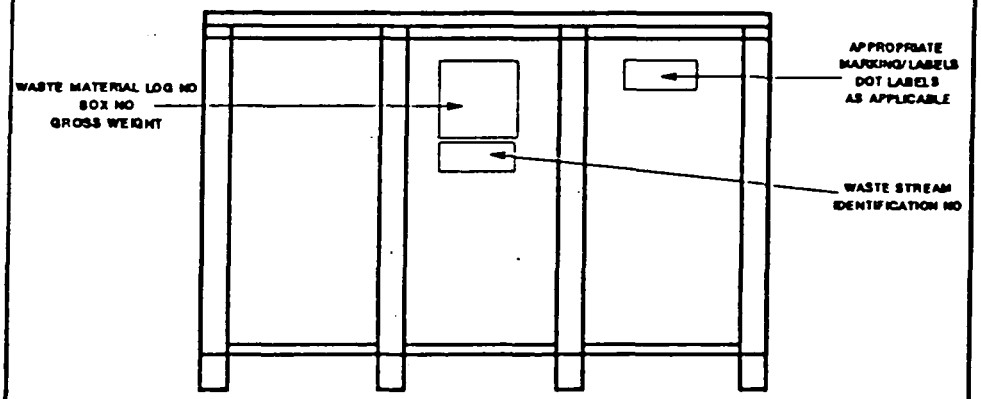
1) Figure 4, "Diagram of Wooden Box Identification" is revised to add "DOT Container Description".

FILING INSTRUCTIONS: File facing page 21 , SOP 1-C-602, (Issue Date: 11-12-91, Revision No. 1)

TYPICAL BOX MATERIAL CONTAINER MARKINGS/LABELS FOR OFFSITE SHIPMENT



TOP VIEW



SIDE VIEW

DIAGRAM OF WOODEN BOX IDENTIFICATION
Figure 4

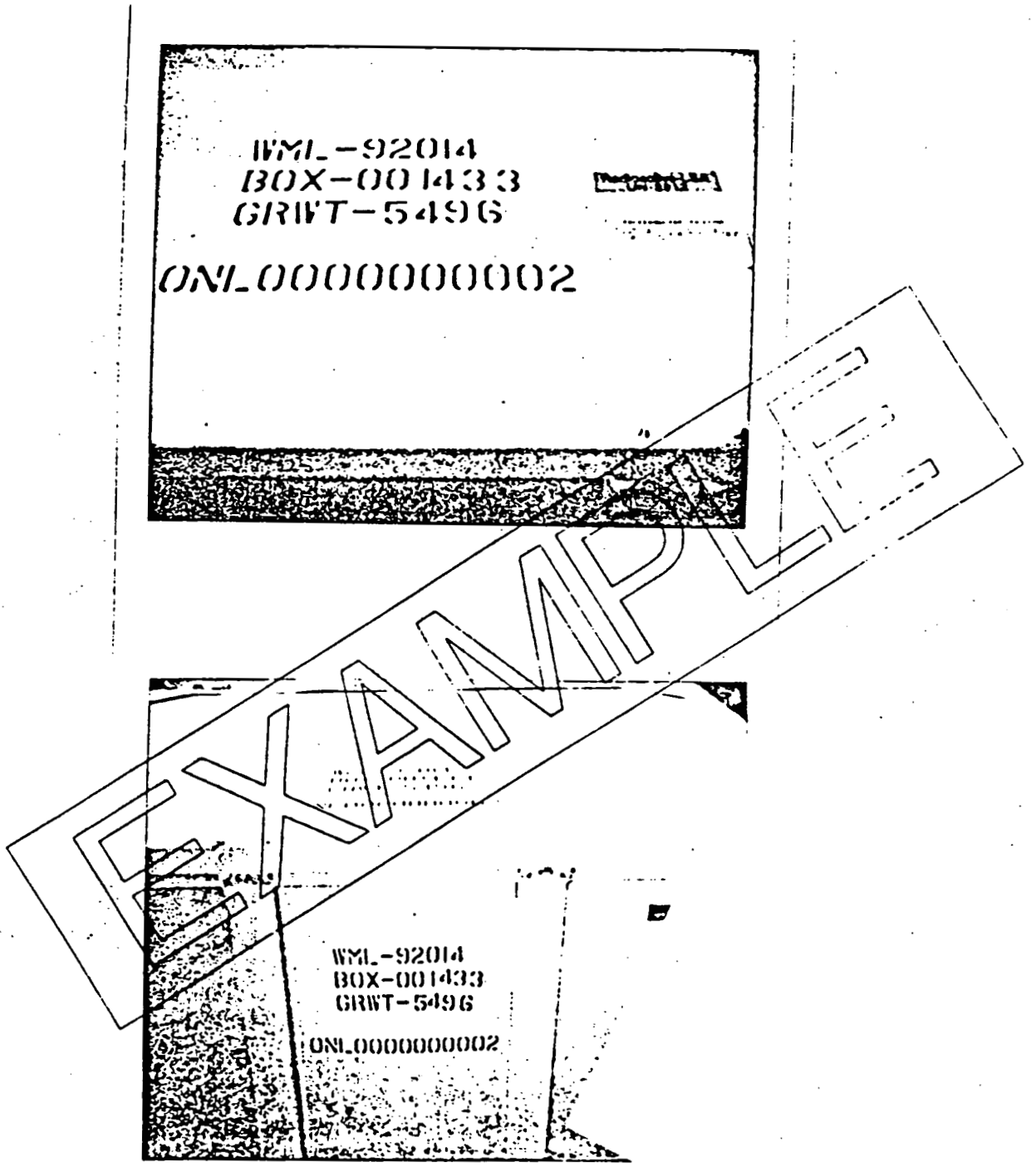


DIAGRAM OF METAL BOX IDENTIFICATION
Figure 5

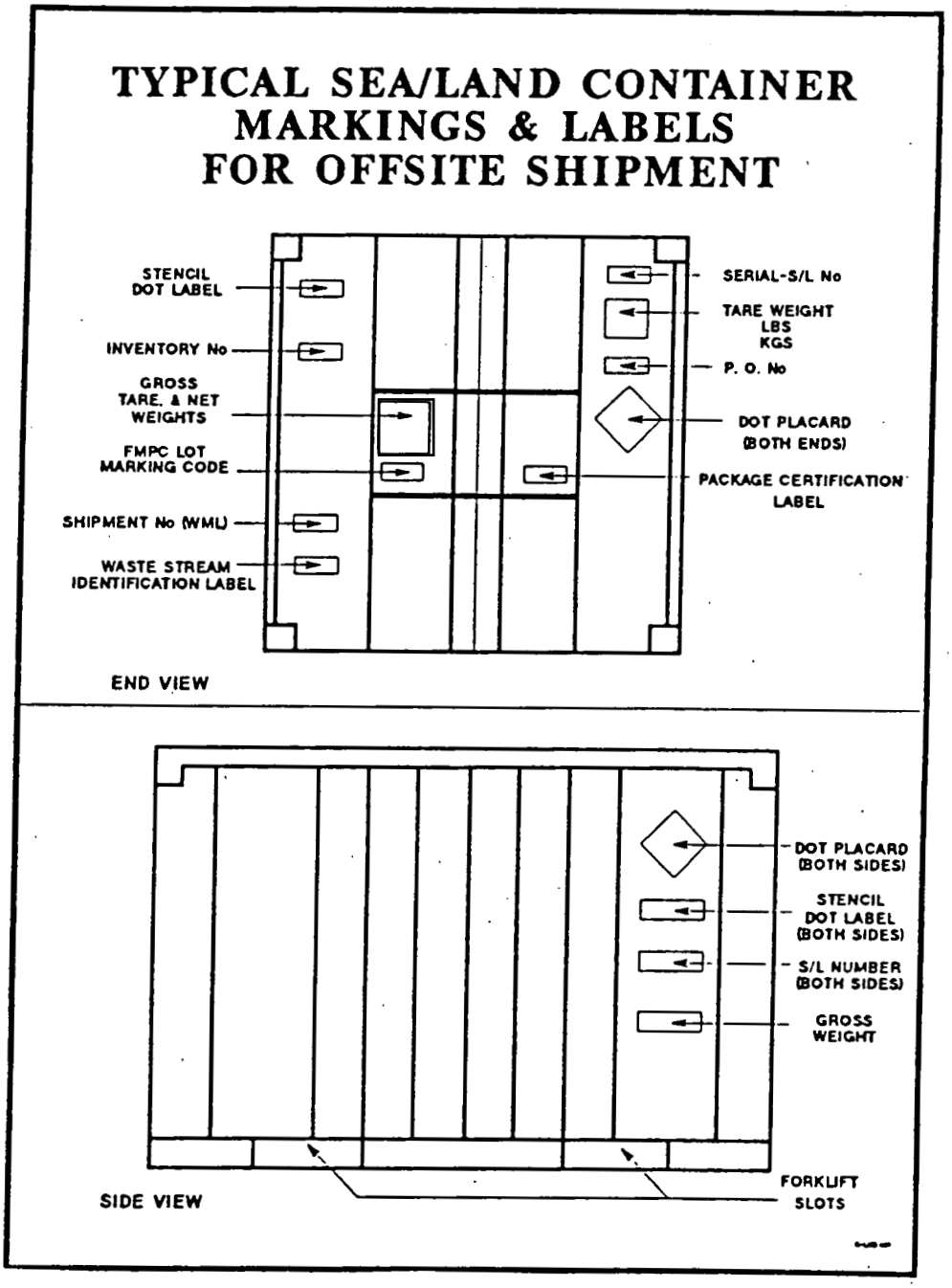
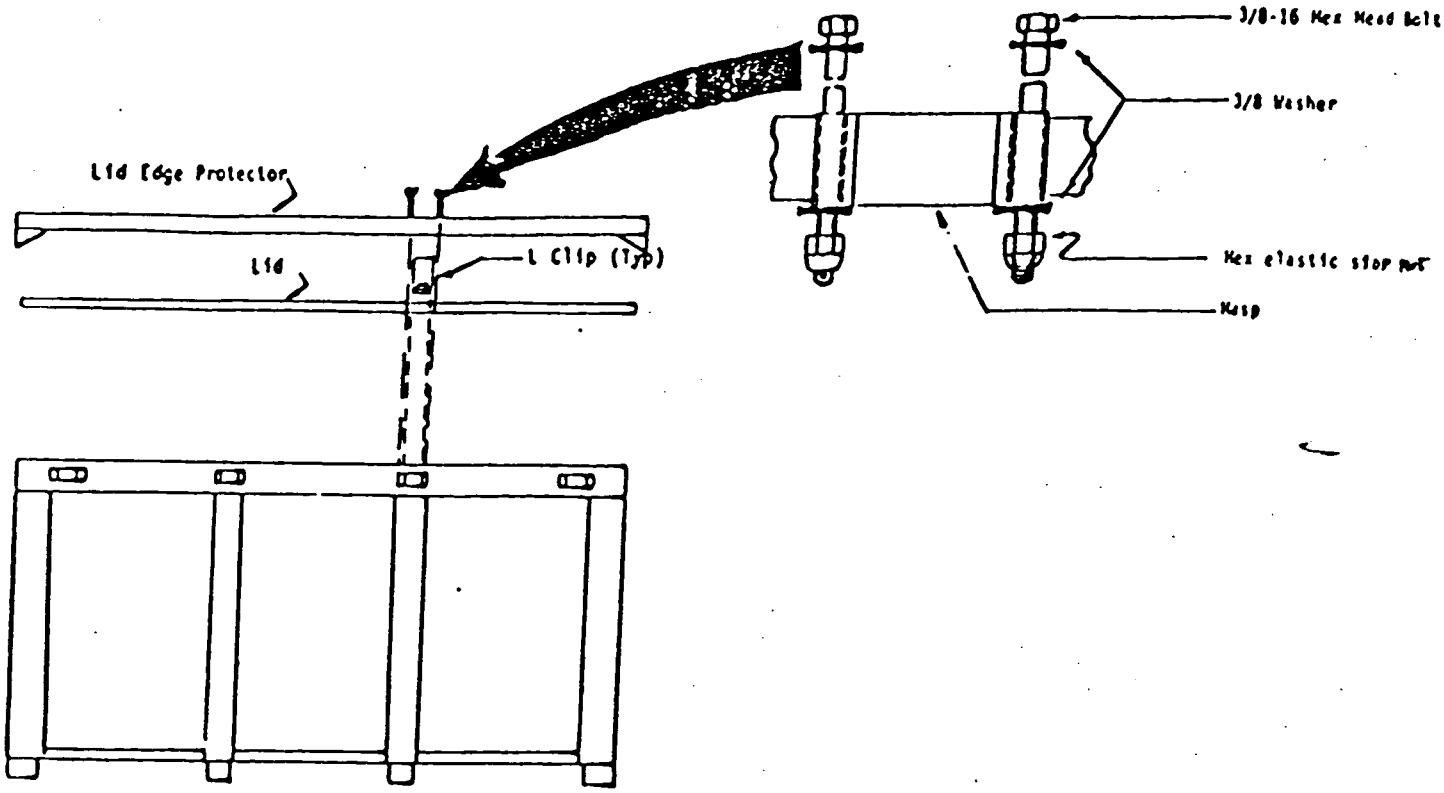
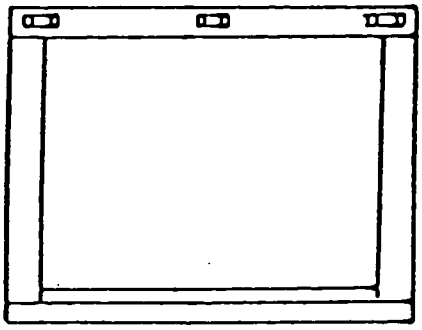


DIAGRAM OF SEA/LAND IDENTIFICATION
Figure 6

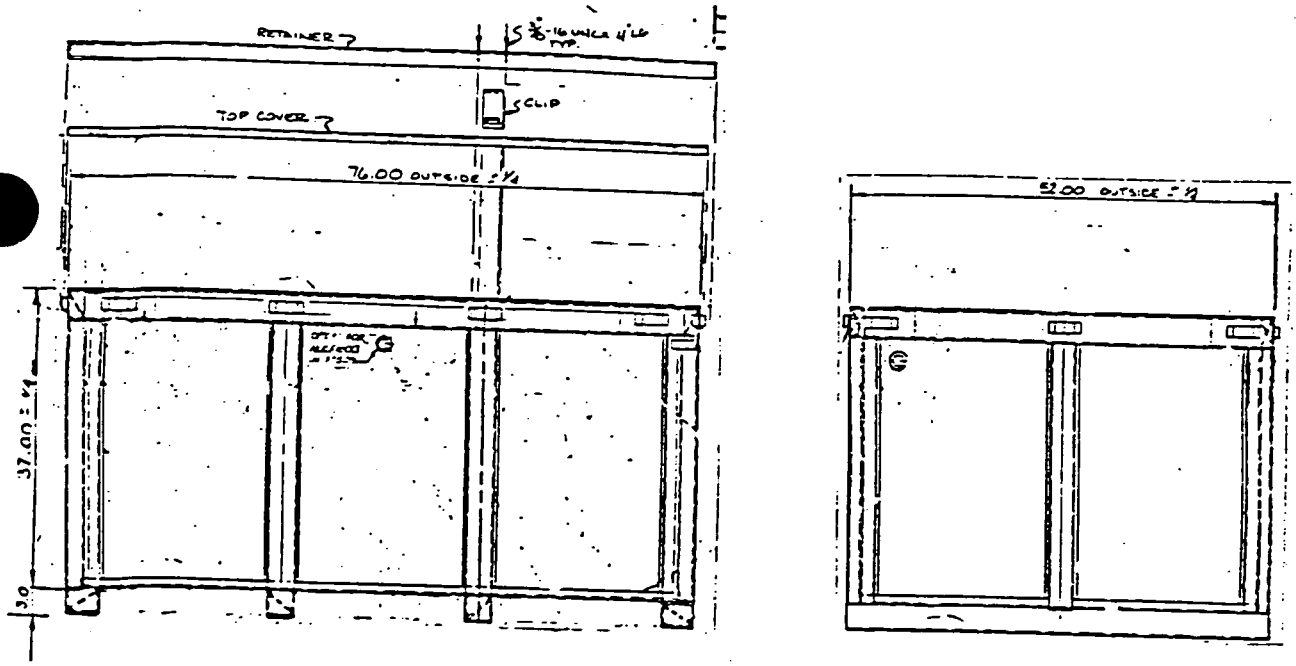


SIDE VIEW

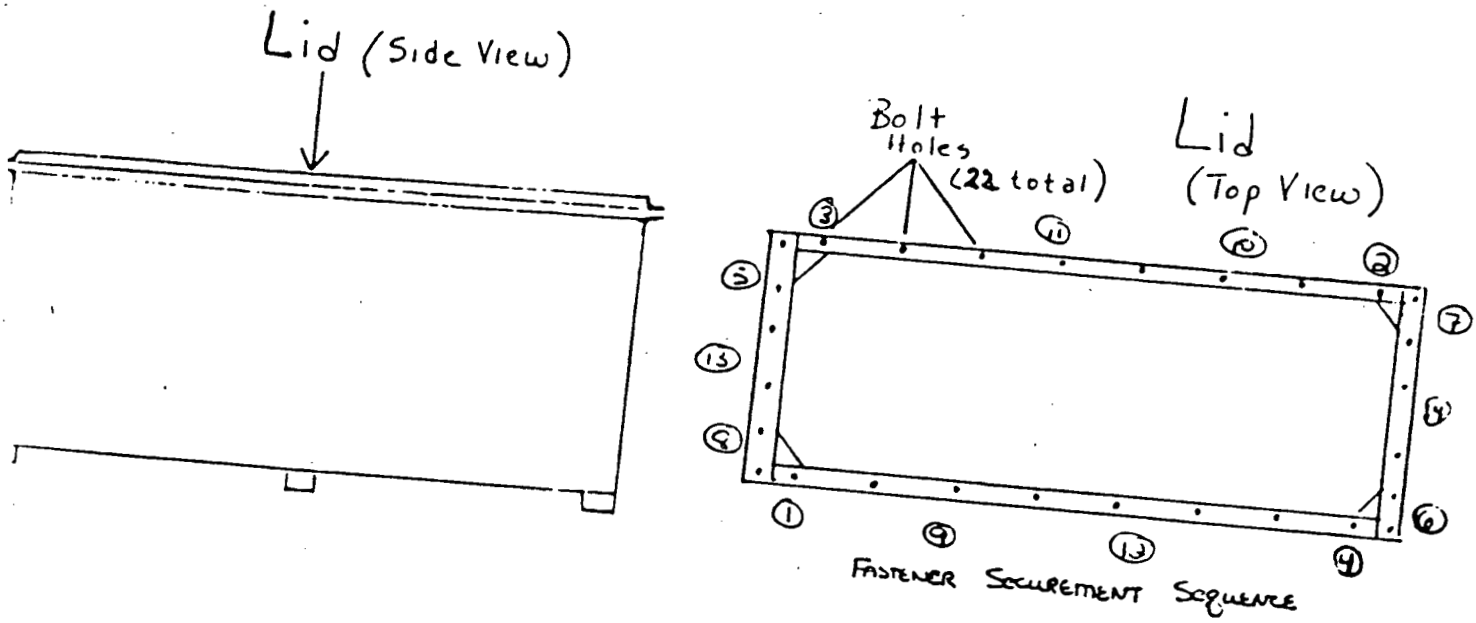


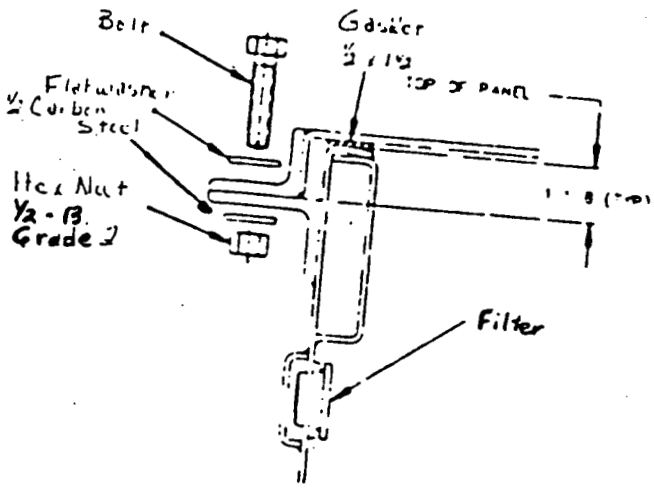
FRONT VIEW

LID INSTALLATION FOR 7A TYPE A BOX WITH CLIP STYLE RETAINER
Figure 7



LID INSTALLATION FOR METAL BOX WITH WEDGE PINS
Figure 8





LID INSTALLATION FOR 7A TYPE A BOX WITH POSITIVE CLOSER BOLT
Figure 9

SITE SERVICES PROCEDURE	LOW LEVEL RADIOACTIVE WASTE (LLRW) SHIPMENT PREPARATION	SOP 1-C-602 AREA: Plants 1 & 6
Authorization: R. L. Gardner, Facilities and Warehousing	Supersedes: 1-C-602, 08-21-90	Issue Date: 11-12-91

RECORD OF ISSUE/REVISIONS

DATE	REV. NO	DESCRIPTION AND AUTHORIZATION
07-07-87	N/A	Procedure requirement for low level (L-LRW) shipment preparation per Request No. P87-150, initiated by K. J. Dunbar.
01-05-88	N/A	Revised to incorporate recommendations from QA/internal audit per Request No. P87-230, initiated by J. E. Harmon.
04-03-89	N/A	Reissued to include final sea/land container preparation and baled trash, and also general update of procedure per Request P88-257, initiated by K. J. Dunbar.
08-21-90	0	Reissued to reflect current operations per Request No. P89-396, initiated by K. A. Lawson. Revision program changed from "Page Revision Date" to "Revision No.".
09-17-90	1	Revised to incorporate CIO Nos. C90-054, C90-055, per Request Nos. P90-339 and P90-341.
06-11-91	2	Revised to include addition of waste stream identification number, clarify container identification, and update 6.5 per Request No. P91-226, initiated by S. Brown.
11-12-91	0	Reissued to update to current operation per Request No. P91-197, initiated by S. Brown and incorporated CIO C91-066 per Request No. P91-472.
01-27-92	1	Revised to incorporate C91-081 per Request No. P92-027.

1.0 PURPOSE

This document defines the requirements for the shipment of Low Level Radioactive waste.

2.0 APPLICABILITY

The requirements apply to the off-site shipment of low level radioactive waste (LLRW) at the FEMP.

3.0 DEFINITIONS

3.1 Bulk Materials - Objects of nonradioactive material externally contaminated with radioactive material. These objects or articles, such as scrap wooden pallets and boxes, must be suitably wrapped or enclosed.

3.2 Carrier - Any person engaged in the transportation of passengers or property as a common, contract, private charter, or freight forwarder, as defined in the Interstate Commerce Act, as amended, or by the United States Postal Service.

3.3 Consignee - The person or organization designated in the shipping papers to receive a shipment.

3.4 Exclusive Use - The sole use of a conveyance by a single consignor and for which all initial, intermediate, and final loading and unloading is carried out in accordance with the direction of the consignor or consignee. Any loading or unloading must be performed by personnel having radiological training and resources appropriate for the safe handling of the consignment. Specific instructions for the maintenance of exclusive use shipment controls must be issued in writing, and included with the shipping paper information provided to the carrier by the consignor.

3.5 ISO Container - A container having a volume of 64 cubic feet or more, designed and constructed to permit being lifted with its contents intact, and intended primarily for the containment of low level radioactive waste (LLRW) during transportation.

3.6 Low Level Radioactive Waste (LLRW) - Waste that contains radioactivity and is not classified as high level waste, transuranic waste, spent nuclear fuel or 11e(2) byproduct material as defined by DOE Order 5820.2A. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level waste, provided the concentration of transuranic is less than 100 n Ci/g.

3.0 DEFINITIONS (cont.)

3.7 Limited Quantities (LQ) - Materials that the radiation level at any point on the external surface of the package does not exceed 0.5 millirem per hour, and the package does not contain more than 15 grams of uranium-235.

3.8 Low Specific Activity (LSA) - Material that the activity is uniformly distributed and that the estimated average concentration per gram of contents does not exceed the specification contained in 49 CFR, section 173.403(n).

3.9 Off-Site - All of the areas outside the main perimeter security fence that are not controlled at all times by guards and security fences.

3.10 Package - Pertaining to radioactive materials, the packaging together with its radioactive contents as presented for transport.

3.11 Packaging - Pertaining to radioactive materials, the assembly of components necessary to ensure compliance with the packaging requirements of 49 CFR Subpart I.

3.12 Radioactive Material - Any material having a specific activity greater than 0.002 microcuries per gram.

3.13 Radioactive Waste - Solid, liquid, or gaseous material that contains radionuclides regulated under the Atomic Energy Act of 1954, as amended, and of negligible economic value when the costs of recovery are considered.

3.14 Waste Generator - From a radiological standpoint, any person, at the FEMP, whose act or process produces (LLRW).

4.0 RESPONSIBILITIES

4.1 Facilities and Warehousing - Responsible for assigning personnel and equipment for loading (LLRW) for off-site shipment.

4.2 Inventory Control and Warehousing - Responsible for Warehouse Attendants inspecting and verifying the accuracy of shipment against the Tally Sheet(s) and placarding carrier trailer or shipment container as required.

4.3 Logistics Administration - Responsible for developing and updating transportation related procedures ensuring compliance with all Federal, State and local regulations, DOE Orders and Directives and consignee requirements.

4.0 RESPONSIBILITIES (cont)

4.4 Maintenance/Garage - Responsible for the inspection of the inbound carrier vehicles that will be used for outbound shipments, providing for the inspection, lubrication, and the preventative maintenance of all government vehicles at FEMP, and documenting all maintenance and inspections.

4.5 Traffic Control Section - Responsible for providing guidance on the requirements for packaging, loading, on-site movement, and off-site shipment of (LLRW) including preparing the bill of lading and coordinating with carriers the scheduling of off-site shipment of (LLRW).

4.6 Waste Shipment and Mixed Waste Storage - Responsible for providing assistance to waste generators, arranging for waste sampling, reviewing waste shipment documentation and categorizing waste. Preparing (LLRW) packages and packaging (LLRW) for off-site shipment and coordinating shipment.

5.0 GENERAL

5.1 Shipments of (LLRW) are made by exclusive use vehicle service only. The shipper must load, and the consignee must unload the vehicle contents. The vehicle must remain closed and sealed with a pre-numbered, tamper-proof seal until consignee is ready to unload the vehicle.

5.2 The following weight limits shall be observed:

5.2.1 Six drum metal overpacks shall not exceed 6,000 pounds gross weight.

5.2.2 55-gallon drums shall not exceed 1,200 pounds gross weight.

5.2.3 30-gallon drums shall not exceed 700 pounds gross weight.

5.2.4 85-gallon drums, when used as metal overpacks for 55-gallon drums, shall not exceed 1,200 pounds, plus the tare weight of the drum.

5.2.5 85-gallon drums, when used as a package, shall not exceed 1,000 pounds gross weight.

5.2.6 ISO containers shall not exceed 45,000 pounds gross weight.

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS

6.1 Safety glasses with side shields and chemical safety goggles shall be worn if (LLRW) are being handled or are in the area unless other eye protection is specified.

6.2 Respiratory protection shall be worn when provided by the supervisor.

6.3 Face shields shall be worn when removing lids or bungs of containers filled with liquids or during operations where the possibility exists that personnel could be splashed with liquids.

6.4 Leather-palmed gloves shall be worn when handling drums, operating equipment, and when loading rough, sharp-edged, or contaminated material.

6.5 Neoprene rubber gloves shall be worn when handling hazardous chemicals/materials and skin contact is possible.

6.6 Any material or object that comes into contact with a (LLRW) shall be considered a (LLRW) and shall be identified as such, and disposed of in an approved identified (LLRW) container.

6.7 Any circumstance which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake to IRS&T Radiological Safety Section for evaluation. The involved personnel shall report to the Urine Sampling Station at the end of their shift to complete a Incident Investigation Report (IIR) (Form FMPC-ES&H-1458), and submit an incident urine sample. The involved personnel shall also report to the Urine Sampling Station at the start of their next shift to submit a followup urine sample. Employees are responsible for complying with additional requirements as specified by the Radiological Safety Section.

7.0 Shipment Initiation

WASTE SHIPMENT AND MIXED WASTE STORAGE

7.1 Determine waste containers to be shipped.

7.2 Provide Traffic Control with advance notification that a shipment of (LLRW) is being prepared for off-site shipment.

7.3 Provide Traffic Control with information required to determine applicable DOT requirements for shipment.

7.0 Shipment Initiation (cont.)

7.4 Provide Facilities and Warehousing with identification and location of waste containers to be shipped and request that containers be moved to appropriate staging area.

7.5 Provide transport organization with documentation that states location on-site where (LLRW) is to be picked up and delivered, name and quantity of waste.

7.6 Provide additional information to transporter so (LLRW) may be loaded and moved safely.

7.7 Provide with information required to mark and label waste containers for compliance with applicable DOT regulations and consignee waste acceptance criteria.

7.8 Contact Traffic Control Section if further guidance is required when preparing waste for off-site shipment.

8.0 Container Preparation

WASTE SHIPMENT AND MIXED WASTE STORAGE

8.1 ISO Containers

8.1.1 Receive notification from Waste Operations of identification of ISO containers that are to be shipped and applicable marking and labeling requirements for shipment.

8.2.2 Verify temporary storage of ISO containers during preparation for off-site shipment is in compliance with existing requirements in applicable departmental procedure(s) and Nuclear Safety guidelines.

8.1.3 Verify ISO container is caulked and banded.

8.1.4 Request Radiological Safety conduct radiological survey(s) and smears of ISO container.

8.1.5 Verify weight and serial number of ISO container.

8.1.6 Inspect ISO container for defects.

8.1.7 Stencil required shipping information on to ISO container or apply appropriate bar code label.

8.0 Container Preparation (cont.)

8.1.8 Conduct final inspection of ISO container to verify that container is in acceptable condition for transport and that applicable markings have been applied.

8.1.9 Attach seal to ISO container doors.

8.1.10 Place required markings on ISO container.

8.1.11 Notify Quality Assurance that ISO container is prepared for inspection.

8.1.12 Notify Quality Assurance that ISO container is ready for final inspection.

8.1.13 Notify Facilities and Warehousing that ISO container is ready to be loaded.

8.1.14 Provide transport organization with documentation that states location on-site where (LLRW) is to be picked up and delivered, name and quantity of waste.

8.2 White Metal Boxes

8.2.1 Receive notification from Waste Shipping Coordinator of identification of white metal boxes for shipment and applicable marking and labeling requirements.

8.2.2 Verify that temporary storage of white metal boxes during preparation for off-site shipment is in compliance with existing requirements and prepare box for shipment per applicable procedures.

8.2.3 Submit required documentation to Waste Shipping Coordinator.

8.2.4 Request that Facilities and Warehousing or move white metal box to final preparation area.

8.2.5 Notify Sitewide Quality Assurance that white metal box is prepared for inspection.

8.2.6 Conduct final inspection of white metal box to verify box is in acceptable condition for transport and that applicable markings have been applied.

8.0 Container Preparation (cont.)

8.2.7 Notify Sitewide Quality Assurance that white metal box is ready for final inspection.

8.2.8 Notify Facilities and Warehousing that white metal box is ready to be loaded.

8.2.9 Provide transport organization with documentation that states location on-site where (LLRW) is to be picked up and delivered, name and quantity of waste.

8.3 Drums

8.3.1 Receive notification from Waste Shipping Coordinator of identification of drums for shipment and applicable marking and labeling requirements.

8.3.2 Verify that temporary storage of drums during preparation for off-site shipment is in compliance with existing requirements and prepare drum for shipment per applicable procedures.

8.3.3 Conduct a final inspection of drum to verify condition for transport and applicable markings have been applied.

8.3.4 Notify Quality Assurance that drum is ready for final inspection.

8.3.5 Notify Facilities and Warehousing that drum is ready to be loaded.

8.3.6 Provide transport organization with documentation that states location on-site where (LLRW) is to be picked up and delivered, name and quantity of waste.

8.3.7 Provide Traffic Control with advance notice of off-site (LLRW) shipments as required.

8.3.8 Prepare Tally Sheet(s) (FVC-VAB-614), Radioactive Waste Management Storage and Disposal (FVC-VAB-614) and forward them to Materials Control and Accountability.

8.3.9 Initiate a Shipping Order For Nuclear Materials (FMPC-CONT-558) for off-site shipments.

8.0 Container Preparation (cont.)

8.3.10 Verify that (LLRW) is identified and classified.

8.3.11 Request radiological surveys of (LLRW) packages from Radiological Safety.

8.3.12 Review survey results with Radiological Safety to verify compliance with applicable departmental procedure(s).

8.3.13 Provide Traffic Control Section with information required to determine applicable DOT requirements and bill of lading descriptions.

8.3.14 Coordinate packaging of (LLRW).

8.3.15 Notify Facilities and Warehousing when (LLRW) is prepared for loading and movement to temporary holding area for off-site shipping.

9.0 Container Loading

9.1 ISO Containers

TRAFFIC CONTROL

9.1.1 Schedule carrier equipment for use in off-site shipment.

9.1.2 Schedule off-site shipment of (LLRW) upon receipt of an approved Shipping Order For Nuclear Materials (FMPC-CONT-558), Tally Sheet(s) (FVC-VAB-614), and Radioactive Waste Management - Storage and Disposal (FVC-VAB-614).

9.1.3 Provide Tally Sheet(s) (FVC-VAB-614) and Radioactive Waste Management -Storage and Disposal (FVC-VAB-614) to Facilities and Warehousing.

MAINTENANCE/GARAGE

9.1.4 Inspect inbound carrier vehicles that will be used for off-site shipments per Federal Motor Carrier Safety Regulations and departmental procedure(s). Record information on required form(s).

9.1.5 Document inspection results on the FMPC Preliminary Visual Trailer Inspection (FMPC-SS-3344) with comments.

9.0 Container Loading (cont.)

FACILITIES AND WAREHOUSING

9.1.6 Forward copies of maintenance and inspection documents to Quality Assurance, and Facility Service and Support.

FACILITIES AND WAREHOUSING

9.1.7 Obtain one set of Tally Sheet(s) (FVC-VAB-614) and Radioactive Waste Management - Storage and Disposal (FVC-VAB-614) from Traffic Control one day prior to shipment date.

9.1.8 Verify ISO containers have been properly recorded on Tally Sheet(s) (FVC-VAB-614) including, container identification numbers, quantities, and gross weights.

9.1.9 Verify gross weights have been marked on exterior of all containers and appropriate LSA markings are affixed as required.

9.1.10 Inspect each container for defects and take corrective action as required.

9.1.11 Before loading, verify that vehicle has been monitored, and results recorded on the Vehicle Radiation Monitoring Report (FS-IRS&T-1596-1).

9.1.12 Review FMPC Preliminary Visual Trailer Inspection (FMPC-SS-3344).

9.1.13 Inspect vehicle and record results on Offsite Loading - Tie Down Inspection - Vehicle Inspection (FMPC-SAML-PUR-2495) and take corrective action as required.

9.1.14 Move vehicle to ISO container location.

9.1.15 Verify runners of ISO containers are free of debris and doors are properly sealed.

9.1.16 Apply prenumbered, tamper-proof seal to locking mechanism and record on Offsite Loading - Tie Down Inspection - Vehicle Inspection (FMPC-SAML-2495).

9.1.17 Load ISO container onto flatbed trailer.

9.1.18 Secure each ISO container to flatbed trailer.

9.0 Container Loading (cont.)

9.1.19 Inspect loaded trailer and complete LLW shipment Checklist and NTS Notification (FMPC-SAML-3065), and Offsite Loading - Tie-Down Inspection - Vehicle Inspection (FMPC-SAML-PUR-2495).

9.1.20 Request Quality Assurance to verify during loading that trailer has been loaded properly and containers properly secured according to applicable departmental procedure(s).

9.1.21 Request Radiological Safety to monitor and smear carrier vehicle trailer to verify that contamination levels are in compliance with applicable requirements and record readings on Vehicle Radiation Monitoring Report (FS-IRS&T-1596-1) and Radiological Survey Report (FS-F-1993-1).

9.1.22 Move vehicle to truck scale to be weighed.

9.1.23 Verify weight has been recorded by Warehouse Attendants on (FMPC-PRO-238).

9.1.24 Verify Warehouse Attendant has affixed "Radioactive Placards" on two opposite sides, and front and rear of container(s) and move conveyance to temporary holding area.

9.1.25 Notify Traffic Control that transport conveyance is loaded and prepared for off-site shipment.

9.1.26 Provide completed documentation for each shipment to the Traffic Control for processing.

INVENTORY CONTROL AND WAREHOUSING

9.1.27 Warehouse Attendants shall affix "Radioactive Placard" on two opposite sides, and front and rear of container(s) prior to weighing motor vehicle.

9.1.28 Warehouse Attendants shall weigh transport vehicle and print weights on (Form FMPC-PRO-238) and reslove discrepancies.

9.2 Six Drum Metal Overpacks

TRAFFIC CONTROL

9.2.1 Schedule carrier equipment for use in off-site shipment.

9.0 Container Loading (cont.)

9.2.2 Schedule off-site shipment of (LLRW) upon receipt of an approved Shipping Order For Nuclear Materials (FMPC-CONT-558), Tally Sheet(s) (FVC-VAB-614), and Radioactive Waste Management - Storage and Disposal (FVC-VAB-614).

9.2.3 Provide Tally Sheet(s) (FVC-VAB-614) and Radioactive WasteManagement - Storage and Disposal (FVC-VAB-614) to Facilities and Warehousing.

MAINTENANCE/GARAGE

9.2.4 Inspect inbound carrier vehicles that will be used for off-site shipments to Federal Motor Carrier Safety Regulations.

9.2.5 Document inspection results on the FMPC Preliminary Visual Trailer Inspection (FMPC-SS-3344) with appropriate comments.

9.2.6 Forward copies of maintenance and inspection documents to Quality Assurance, and Facility Service and Support.

FACILITIES AND WAREHOUSING

9.2.7 Obtain one set of Tally Sheet(s) (FVC-VAB-614) and Radioactive Waste Management - Storage and Disposal (FVC-VAB-614) from Traffic Control Section one day prior to shipment date.

9.2.8 Verify that the Six Drum Metal Overpacks have been properly recorded on the Tally Sheet(s) (FVC-VAB-614) including, container identification numbers, quantities, and gross weights.

9.2.9 Verify that gross weights have been marked on the exterior of all containers and appropriate LSA markings are affixed as required.

9.2.10 Inspect each container for defects and take corrective action as required.

9.2.11 Before loading, verify that the vehicle has been monitored, and the results recorded on Vehicle Radiation Monitoring Report (FS-IRS&T-1596-1).

9.2.12 Review FMPC Preliminary Visual Trailer Inspection (FMPC-SS-3344).

9.2.13 Inspect vehicle and record the results on Offsite Loading - Tie Down Inspection - Vehicle Inspection (FMPC-SAML-PUR-2495) and take corrective action as required.

9.0 Container Loading (cont.)

9.2.14 Move vehicle to Six Drum Metal Overpack location.

9.2.15 Load overpacks to assure equal weight distribution on the trailer.

9.2.16 Inspect the loaded trailer and complete the LLW Shipment Checklist and NTS Notification (FMPC-SAML-3065), and the Off-Site Loading - Tie-Down Inspection - Vehicle Inspection (FMPC-SAML-PUR-2495).

9.2.17 Request Quality Assurance to verify during loading that trailer has been loaded properly and containers properly secured according to applicable departmental procedure(s).

9.2.18 Request Radiological Safety to monitor and smear carrier vehicle trailer to verify that the contamination levels are in compliance with applicable requirements, and record readings on Vehicle Radiation Monitoring Report (FS-IRS&T-1596-1) and Radiological Survey Report (FS-F-1993-1).

9.2.19 Move vehicle to truck scale to be weighed.

9.2.20 Verify weight has been recorded by Warehouse Attendants on (FMPC-PRO-238).

9.2.21 Verify Warehouse Attendants have affixed "Radioactive Placards" on two opposite sides, and front and rear of container(s) and move conveyance to temporary holding area.

9.2.22 Notify Traffic Control that transport conveyance is loaded and prepared for off-site shipment.

9.2.23 Ensure the envelope containing copies of the Tally Sheet(s), Radioactive Waste Management - Storage and Disposal Data Sheet, Hazardous Waste Certification Statement and Certification Statement for the shipment are placed inside the trailer to be removed by NTS personnel upon arrival at the disposal site.

9.2.24 Apply prenumbered, tamper-proof seal to locking mechanism and record on Offsite Loading - Tie Down Inspection - Vehicle Inspection (FMPC-SAML-2495).

9.2.25 Provide completed documentation for each shipment to Traffic Control for processing.

9.0 Container Loading (cont.)

INVENTORY CONTROL AND WAREHOUSING

9.2.26 Warehouse Attendants affix "Radioactive Placard" on two opposite sides, and front and rear of trailer prior to weighing motor vehicle.

9.2.27 Warehouse Attendants shall weigh transport vehicle and print weights on (FMPC-PRO-238), and resolve discrepancies.

9.3 White Metal Boxes

TRAFFIC CONTROL

9.3.1 Schedule carrier equipment for use in off-site shipment.

9.3.2 Schedule off-site shipment of (LLRW) upon receipt of an approved Shipping Order For Nuclear Materials (FMPC-CONT-558), Tally Sheet(s) (FVC-VAB-614), and Radioactive Waste Management - Storage and Disposal (FVC-VAB-614).

9.3.3 Provide Tally Sheet(s) (FVC-VAB-614) and Radioactive Waste Management - Storage and Disposal (FVC-VAB-614) to Facilities and Warehousing.

MAINTENANCE/GARAGE

9.3.4 Inspect inbound carrier vehicles that will be used for off-site shipments.

9.3.5 Document inspection results on the FMPC Preliminary Visual Trailer Inspection (FMPC-SS-3344) with comments.

9.3.6 Forward copies of maintenance and inspection documents to Quality Assurance, and Facility Service and Support.

FACILITIES AND WAREHOUSING

9.3.7 Obtain one set of Tally Sheet(s) (FVC-VAB-614) and Radioactive Waste Management - Storage and Disposal (FVC-VAB-614) from Traffic Control one day prior to shipment date.

9.3.8 Verify White Metal Boxes have been properly recorded on Tally Sheet(s) (FVC-VAB-614) including, container identification numbers, quantities, and gross weights.

9.0 Container Loading (cont.)

9.3.9 Verify that gross weights have been marked on exterior of all containers and appropriate LSA markings are affixed as required.

9.3.10 Inspect each container for defects and correct defects as required.

9.3.11 Before loading, verify that vehicle has been monitored, and results recorded on Vehicle Radiation Monitoring Report (FS-IRS&T-1596-1).

9.3.12 Review FMPC Preliminary Visual Trailer Inspection (FMPC-SS-3344).

9.3.13 Inspect vehicle and record results on Offsite Loading - Tie Down Inspection - Vehicle Inspection (FMPC-SAML-PUR-2495) and take corrective action as required.

9.3.14 Move vehicle to white metal box location.

9.3.15 Verify that runners are free of debris and that doors are properly sealed.

9.3.16 Apply prenumbered, tamper-proof seal to locking mechanism and record on Offsite Loading - Tie Down Inspection - Vehicle Inspection (FMPC-SAML-2495).

9.3.17 Load white metal boxes on to the flatbed trailer.

9.3.18 Secure each white metal box to flatbed trailer.

9.3.19 Inspect loaded trailer and complete LLW shipment Checklist and NTS Notification (FMPC-SAML-3065), and Off-Site Loading - Tie-Down Inspection - Vehicle Inspection (FMPC-SAML-PUR-2495).

9.3.20 Request Quality Assurance to verify loading and securing of containers per applicable procedure(s).

9.3.21 Request Radiological Safety to monitor and smear carrier vehicle trailer to verify that contamination levels are in compliance with 49 CFR, and record their readings on Vehicle Radiation Monitoring Report (FS-IRS&T-1596-1) and Radiological Survey Report (FS-F-1993-1).

9.0 Container Loading (cont.)

9.3.22 Move vehicle to truck scale to be weighed.

9.3.23 Verify weight has been recorded by Warehouse Attendants on (FMPC-PRO-238).

9.3.24 Verify that "Radioactive" placards have been placed on two opposite sides, front and rear of container(s) are moved to temporary holding area.

9.3.25 Notify Traffic Control that transport conveyance is loaded and prepared for off-site shipment.

9.3.26 Provide completed documentation for each shipment to Traffic Control for processing.

INVENTORY CONTROL AND WAREHOUSING

9.3.27 Warehouse Attendants shall affix "Radioactive Placard" on two opposite sides, front and rear of container(s) prior to weighing motor vehicle.

9.3.28 Warehouse Attendants shall weigh transport vehicle and print weights on (FMPC-PRO-238), and resolve discrepancies.

9.4 Drums

TRAFFIC CONTROL

9.4.1 Schedule carrier equipment for use in off-site shipment.

9.4.2 Schedule off-site shipment of (LLRW) upon receipt of an approved Shipping Order For Nuclear Materials (FMPC-CONT-558), Tally Sheet(s) (FVC-VAB-614), and Radioactive Waste Management - Storage and Disposal (FVC-VAB-614).

9.4.3 Provide Tally Sheet(s) (FVC-VAB-614) and Radioactive Waste Management -Storage and Disposal (FVC-VAB-614) to Facilities and Warehousing.

MAINTENANCE/GARAGE

9.4.4 Inbound carrier vehicles used for off-site shipments shall be inspected.

9.0 Container Loading (cont.)

9.4.5 Document inspection results on the FMPC Preliminary Visual Trailer Inspection (FMPC-SS-3344) with appropriate comments.

9.4.6 Forward copies of maintenance and inspection documents to Quality Assurance and Facility Service and Support Sections.

FACILITIES AND WAREHOUSING

9.4.7 Obtain one set of Tally Sheet(s) (FVC-VAB-614) and the Radioactive Waste Management - Storage and Disposal (FVC-VAB-614) from Traffic Control Section one day prior to the shipment date.

9.4.8 Verify that the Drums have been properly recorded on the Tally Sheet(s) (FVC-VAB-614) including, container identification numbers, quantities, and gross weights.

9.4.9 Verify that gross weights have been marked on the exterior of all containers and appropriate LSA markings are affixed as required.

9.4.10 Inspect each container for defects and correct defects as required.

9.4.11 Before loading, verify that vehicle has been monitored, and the results recorded on Vehicle Radiation Monitoring Report (FS-IRS&T-1596-1(REV.8/23/91).

9.4.12 Review FMPC Preliminary Vehicle Inspection (FMPC-SS-3344).

9.4.13 Inspect vehicle and record the results on Offsite Loading - Tie Down Inspection - Vehicle Inspection (FMPC-SAML-PUR-2495) and take corrective action as required.

9.4.14 Move vehicle to area where drums are located.

9.4.15 Load drums and request Quality Assurance to verify during loading that trailer has been loaded and containers secured.

9.4.16 Request Radiological Safety to monitor and smear carrier vehicle trailer to verify that the contamination levels are in compliance with 49 CFR, and record their readings on Vehicle Radiation Monitoring Report (FS-IRS&T-1596-1) and Radiological Survey Report (FS-F-1993-1).

9.0 Container Loading (cont.)

9.4.17 Move vehicle to truck scale to be weighed.

9.4.18 Verify weight has been recorded by Warehouse Attendants on (FMPC-PRO-238).

9.4.19 Verify Warehouse Attendants have affixed "Radioactive Placards" on two opposite sides, and front and rear of container(s) and move conveyance to temporary holding area.

9.4.20 Notify Traffic Control Section that transport conveyance is loaded and prepared for off-site shipment.

9.4.21 Ensure placement of the envelope containing copies of the Tally Sheet(s), Radioactive Waste Management - Storage and Disposal Data Sheet, Hazardous Waste Certification Statement and Certification Statement for the shipment are inside the trailer.

9.4.22 Apply prenumbered, tamper-proof seal to locking mechanism and record on Offsite Loading - Tie Down Inspection - Vehicle Inspection (FMPC-SAML-2495).

9.4.23 Provide completed documentation for each shipment to Traffic Control for processing.

INVENTORY CONTROL AND WAREHOUSING

9.4.24 Warehouse Attendants shall affix "Radioactive Placard" on two opposite sides, and front and rear of container(s) prior to weighing motor vehicle.

9.4.25 Warehouse Attendants shall weigh transport vehicle and print weights on (FMPC-PRO-238) and resolve discrepancies.

10.0 Shipment

TRAFFIC CONTROL SECTION

10.1 Notify carrier to dispatch driver to FEMP for shipment pick-up.

10.2 Verify OFFSITE LOADING - TIE DOWN INSPECTION - VEHICLE INSPECTION (FEMP-SAML-2495) has been completed and signed by Warehouse Attendant and Facilities and Warehousing Supervisor.

10.0 Shipment (cont.)

10.3 Verify and sign the LLW Shipment Checklist and NTS Notification (FMPC-SAML-3065) has been completed and signed by Facilities and Warehousing Supervisor.

10.4 Request Radiological Safety to conduct a radiological survey of the carrier vehicle trailer.

10.5 Verify that the Radiological survey results are documented on the Vehicle Radiation Monitoring Report (FS-IRS&T-1596-1(REV.8/23/91)).

10.6 Verify all associated shipping documents have been received.

10.7 Prepare bill of lading.

10.8 Notify Quality Assurance that shipment is ready for certification.

10.9 Verify that the Shipping Envelope is in the transport vehicle or trailer (as applicable) and that a tamper-proof seal has been attached to the doors of the transport vehicle trailer.

10.10 Request Radiological Safety to conduct a "Cab Only" survey and document on applicable form to insure vehicle is within radiological limits.

10.11 Sign bill of lading and Shipping Order for Nuclear Materials.

10.12 Provide Carrier/Driver with the written driver instruction packet containing, specific instruction for maintenance of exclusive use shipment controls and other information pertaining to shipment.

10.13 Verify "Radioactive Placards" have been properly affixed to two opposite sides, and front and rear of trailer/container(s).

10.14 Notify consignee of estimated time of arrival for each shipment and document notification.

10.15 Complete the Shipping Order for Nuclear Materials (FMPC-CONT-558) and return it to Materials Control and Accountability the day of shipment departure.

RECORD OF ISSUE/REVISIONS

DATE	REV.NO.	DESCRIPTION AND AUTHORITY
02-28-92	0	Requirement for document to identify shipment of low level radioactive waste requirements per Request No. P92-050, initiated by J. P. McGrogan. This document replaces SOP-TRF-46-C-110.

UNCONTROLLED COPY

Control Number _____ 3511

Revision: 3

Safety Procedures	Title: Radioactive Material Shipping and Receiving	SP-P-35-009
		Department: IRS&T Section: RS

Authorization: Supersedes: None
Revision Date: 2/18/92

1.0 PURPOSE

Set administrative guidelines in the shipping and receiving of Radioactive Material at the FEMP.

2.0 SCOPE

Establish the radiological surveys and limits for all radioactive materials received or shipped, and all vehicles used for radioactive material shipments or deliveries. It does not apply to materials to be transported exclusively on site.

3.0 DEFINITIONS

None

4.0 RESPONSIBILITIES

4.1 The Manager(s) of personnel required to perform work per this procedure shall ensure that affected personnel are informed or trained to the extent necessary prior to initiation of that work.

4.2 The Radiological Safety Technician (RST) shall be responsible for surveying packages and vehicles and making required reports and notifications in accordance with SP-P-35-031.

5.0 GENERAL

None

6.0 PROCEDURE

6.1 Surveys shall be performed within the following time frames:

6.1.1 Incoming packages nonexclusive use vehicle - As soon as practical but not more than three (3) hours after receipt during normal working hours.

6.1.2 All vehicles - prior to arrival inside the controlled area fence.

6.1.3 All Vehicles - Prior to exiting the controlled area.

6.1.4 Outgoing package - within 168 hours (7 days) of leaving or loading into lockable van or loading ISO container (sealand) onto a flatbed trailer.

6.1.5 All incoming empty or loaded outgoing van trailers or flatbeds, once the survey has been completed, must have a security seal attached to the door lock to ensure its radiological integrity. The seal number must be recorded on form FS-IRS&T-1596-1. For incoming empty flatbed trailers, the date of the survey shall not exceed 168 hours (7 days) from the time of the survey until the time when the trailer exits from the controlled area.

6.1.6 The 168 hour (7 day) time limit remains in affect only if the packages or trailers are staged in a controlled area.

6.2 General Survey Requirements

6.2.1 Packages shall be swiped using dry filter paper or other methods, as specified in SP-P-35-023 and SP-P-35-046. At least 300 square centimeters (cm^2) of each package shall be swiped.

6.2.2 Packages shall be surveyed for dose rate at the surface and at one meter (3.3 ft.). Vehicles shall be surveyed for dose rate at the surface, and at two meters (6.6 ft.) if surface readings exceed 2mR/hr.

6.3 All dose rate surveys for this procedure shall be conducted using a G-M side window survey meter. Smears are to be counted on a simultaneous alpha/beta proportional counter or by other methods as specified in SP-P-35-023 and SP-35-046.

6.4 Contamination and radiation limits for this procedure are specified in Attachment A.

6.4.1 If a contamination or radiation survey result exceeds the applicable limit specified in Attachment A, refer to SP-P-35-031 "Event Notification and Reporting of Radiological Safety Occurrences".

6.0 PROCEDURE (continued)

6.5 Requirements for incoming and outgoing packages

6.5.1 Survey surface for dose rate.

6.5.2 Survey for dose rate at one meter.

6.5.3 Survey for removable contamination.

6.5.4 Record dose rate and smear results on form FS-F-1993-1 (Attachment B) and FS-F-1993-2 (Attachment C). For shipments requiring additional information on the radioactive material being shipped (radionuclide, net. weight., and curies) form FS-IRS&T-1596-1 should be completed (Attachment D).

6.6 Requirements for Exclusive Use Shipments

6.6.1 Loaded vehicles shall be spotted away from other sources of ionizing radiation, to minimize error, except railroad cars may be coupled together.

6.6.1.1 Survey the van/flatbed exterior surface for dose rates. If dose rates on the exterior surfaces do not exceed 2 mR/hr skip step 6.6.1.2.

6.6.1.2 Survey for dose rates at 2 meters from the exterior surface.

6.6.1.3 Smear areas as outlined in step 6.6.2

6.6.1.4 Record dose rate and smear results on form FS-F-1993-1 (Attachment B) and FS-F-1993-2 (Attachment C).

6.6.1.5 For Over-The-Road-Trucks - If exterior surface dose rates of the van/flatbed do not exceed 2 mR/hr then a survey of the cab interior is not required. If surface dose rates of the van/flatbed exceed 2 mR/hr then survey for dose rate at the top back of the driver's and passenger's seats or at the back wall of the sleeper whichever is appropriate after the over-the-road-tractor has been hooked up. Record the result on form FS-IRS&T-1596-1 (Attachment E).

6.6.2 Smear locations for specific vehicles

6.6.2.1 Closed Vans - Swipe of the floor and shoring of the trailer behind the last packages and the apron (metal floor area under and exterior to the rear door) of the trailer.

6.6.2.2 Open Top Trailer - Swipe any surfaces which may have been contaminated.

6.0 PROCEDURE (continued)

6.6.2.3 Flatbed Trailers - Swipe accessible bed areas.

6.6.2.4 Box Cars - Swipe accessible areas of floor, shoring and apron(s) before door(s) are closed.

6.6.2.5 Gondolas - Swipe accessible areas which may have become contaminated. (Container surfaces may be swiped at surveyor's option.)

6.6.2.6 Flatcars - Swipe accessible areas of flatcar floor.

6.7 Records Distribution

6.7.1 The original copy of all survey records shall be sent to Records Management, a copy sent to Traffic Control and to Quality Assurance. Copies should be distributed immediately upon completion, either via FAX or by hand delivery.

7.0 APPLICABLE DOCUMENTS

7.1 DOE Order 5480.11 "Radiation Protection for Occupational Workers"

7.2 SP-P-35-023, "Radiological Contamination Surveys"

7.3 SP-P-35-031, "Event Notification and Reporting of Radiological Safety Occurrences"

7.4 SP-P-35-046, "Counting Smears with Field Survey Instruments"

8.0 FORMS USED

8.1 FS-F-1993-1, Radiological Survey Report

8.2 FS-F-1993-2, Radiological Survey Report (Continuation Sheet)

8.3 FMPC-ES&H-1596, Shipment Radiation Monitoring Report.

8.4 FS-IRS&T-1596-1, Vehicle Radiation Monitoring Report.

588

9.0 ATTACHMENTS

9.1 Attachment A, Maximum Allowable Radiation and Contamination Levels.

9.2 Attachment B, Radiological Survey Report.

9.3 Attachment C, Radiological Survey Report (continuation).

9.4 Attachment D, Shipment Radiation Monitoring Report.

9.5 Attachment E, Vehicle Radiation Monitoring Report.

ATTACHMENT A

MAXIMUM ALLOWABLE CONTAMINATION AND RADIATION LEVELS

	REMOVABLE CONTAMINATION LEVELS (dpm/ 100cm^2)	RADIATION LEVELS (mrem/hr)
EXCLUSIVE USE VEHICLE	Empty, Stenciled "Radioactive Materials Use Only" <10,000 alpha, <10,000 beta inside [1] Empty, not stenciled "Radioactive Materials Use Only" <1,000 alpha, <1,000 beta, <5000 alpha or beta direct frisk inside [2]	Loaded - Surface: 200, two meter: 10, cab: 2 Empty-Stenciled "Radioactive Materials Use Only" - interior surface: 10, interior one meter: 2 Empty-Not stenciled "Radioactive Materials Use Only" - interior surface: 0.5
Exclusive use package flatbed trailer or ISO containers (sea/lands)	All Surfaces: <1,000 alpha, <1,000 beta [2]	Flatbed - 200 Closed van,fixed position package - 1000
		Flatbed: Vertical plane from edge of bed - 200, Two meter-10, cab - 2 Sea/land container - Surface: 200, two meter - 10,
Non-exclusive use vehicle	All Surfaces: <1,000 alpha, <1,000 beta, <5,000 alpha or beta direct frisk [2]	Empty - Not detectable above background
Non-exclusive use package	All Surfaces: <1,000 alpha, <1,000 beta [2]	Surface dose rate - 200, one meter - 10

[1] For uranium contamination only. For nuclides other than uranium, the limits are 10 times attachment 2 of DOE Order 5480.11 for the specific nuclide.

[2] For uranium contamination only. For nuclides other than uranium, the limits are 1 times attachment 2 of DOE Order 5480.11 for the specific nuclide.

ATTACHMENT B

RADIOLOGICAL SURVEY REPORT

Fernald Site
IRS&T - RADIOLOGICAL SAFETY
RADIOLOGICAL SURVEY REPORT

DATE:	LOCATION:	PRINT NAME:	PAGE
TIME:	LEVEL:	SIGNATURE:	1 of ___
REASON FOR SURVEY			

INSTRUMENTS								
MODEL	SERIAL NUMBER	TYPE (α, β, γ)	CALIBRATION-DUE DATE	BKGD. (cpm)	EFF./CF	MDA (dpm)	INSP./PERFORMANCE TEST SAT? YES	NO

ITEM NUMBER	LOCATION AND/OR DESCRIPTION	DPM/100cm² ALPHA		DPM/100cm² BETA-GAMMA		CORRECTED DOSE RATE (MREM/HR)			
		REMOVABLE	FIXED PLUS REMOVABLE	REMOVABLE	FIXED PLUS REMOVABLE	γ CONTACT	β/γ CONTACT	γ AT ___ FT.	β/γ AT ___ FT.

NO.	DISTRIBUTION OF COPIES
1	Radiological Safety Supervisor
2	Facility Supervisor
3	Operable Unit Manager

NOTIFICATION OF SURVEY RESULTS					
SUPERVISOR NOTIFIED	TIME	DATE	NOTIFIED BY	REVIEWED BY	DATE

FS-F-1993-1 (REV. 11/7/91)

ATTACHMENT C

RADIOLOGICAL SURVEY REPORT (CONTINUATION SHEET)

FMPC
INDUSTRIAL, RADIOLOGICAL SAFETY & TRAINING - RADIOLOGICAL SAFETY
RADIOLOGICAL SURVEY REPORT (CONTINUATION SHEET)

ITEM NUMBER	GRID COORDINATES	DESCRIPTION	CORRECTED DOSE RATE (mRem/hr)				DPM ALPHA		DPM BETA-GAMMA	
			γ	β/γ	γ	β/γ				
			CONTACT	CONTACT	3 FT.	3 FT.	100 CM²	PROBE	100 CM²	PROBE

FMPC-IRS&T-1993-2 (REV 7/13/90)

FS-F-1993-2

ATTACHMENT D

SHIPMENT RADIATION MONITORING REPORT

Westinghouse Materials Company of Ohio

SHIPMENT RADIATION MONITORING REPORT

ENVIRONMENT, SAFETY & HEALTH - ENVIRONMENTAL & RADIOLOGICAL MONITORING

DATE MONITORED:	NUMBER OF PACKAGES:	EMPT: (SIGNATURE)

TYPE OF SHIPMENT: ☐ INCOMING ☐ OUTGOING "EXCLUSIVE USE" SHIPMENT?: ☐ Yes ☐ No

SHIPPER: ☐ WMCO ☐ MARTIN MARIETTA ☐ ROCKY FLATS ☐ OTHER _____

CONSIGNEE: ☐ WMCO ☐ MARTIN MARIETTA ☐ ROCKY FLATS ☐ _____

PACKAGE TYPE: ☐ 55 GALLON DRUM ☐ T-HOPPER ☐ CRATE ☐ OTHER _____ WMCO Shipment No.: _____

SHIPMENT BY: ☐ Truck ☐ Rail Car ☐ OTHER NONROUTINE (EXPLAIN FULLY)

REMARKS:

PACKAGE NUMBER	RADIOACTIVE MATERIAL			DOSE RATE, mR/hr		SURFACE CONTAMINATION		
	RADIO-NUCLIDE	NET WT.*	CURIES*	PACKAGE SURFACE	3' FROM SURFACE	β - γ d/m/100cm²	ALPHA d/m/100cm²	DIRECT OR SMEARS?

Additional information attached? (E&RM copy only): ☐ Yes ☐ No

* *Outgoing shipments only.*

NO.	DISTRIBUTION OF COPIES
1	Environmental & Radiological Monitoring (RECORD COPY)
2	Transportation Supervisor (YELLOW)
3	Other (GREEN)

INSTRUMENTS

	MODEL	SERIAL NUMBER
ALPHA		
BETA-GAMMA		

FMPC-ES&H-1596 (REV 9/2/88)

ATTACHMENT E

VEHICLE RADIATION MONITORING REPORT

FMPC
ENVIRONMENT, SAFETY & HEALTH ENVIRONMENTAL & RADIOLOGICAL MONITORING
VEHICLE RADIATION MONITORING REPORT

Date Monitored: _____ Monitored by: _____ (SIGNATURE)

Carrier Name: _____

Vehicle Type: Tractor-trailer ☐ Other motor vehicle ☐ Railcar ☐ Open flatbed ☐ Covered ☐

Other ☐ (explain) _____

License no., if motor vehicle: _____ State: _____

Trailer or railcar identification: _____

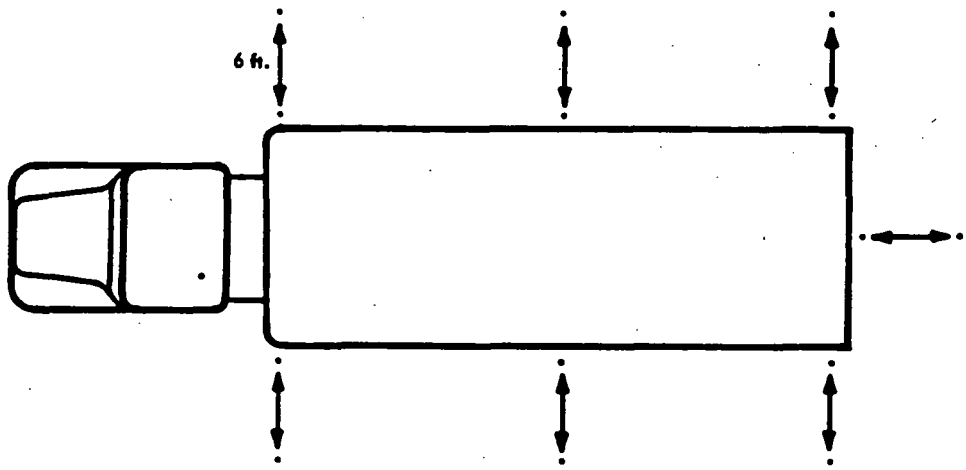
Is this an exclusive use vehicle? Yes ☐ No ☐

Vehicle Status: (a) Outgoing ☐ (b) Incoming ☐ (c) Outgoing empty, not "exclusive use" ☐ (d) Empty, before loading ☐

(e) Outgoing empty, "exclusive use" ☐ (f) If (e) is checked, is vehicle to remain "exclusive use"? Yes ☐ No ☐

Is visible contamination present? Yes ☐ No ☐ If "yes", show on diagram.

Dose rate shown by asterisks in mrem/hr. Surface alpha contamination, circled, in d/m/100cm².



(1) Same locations apply to van-type trucks. For railcars, disregard cab section but show dose rates found at each end.
(2) Measurements at 6-ft. not required if all readings at vehicle surface are not greater than 10 mrem/hr.

Survey Instruments Used

Alpha — Type or Model No. _____ Serial No. _____

Beta-gamma — Type or Model No. _____ Serial No. _____

Additional information attached? (E&RM copy only): Yes ☐ No ☐

NO.	DISTRIBUTION OF COPIES
1	Environmental & Radiological Monitoring [illegible]
2	Transportation Supervisor

FMPC-ES&H-1596-1 (REV 0/70/90)

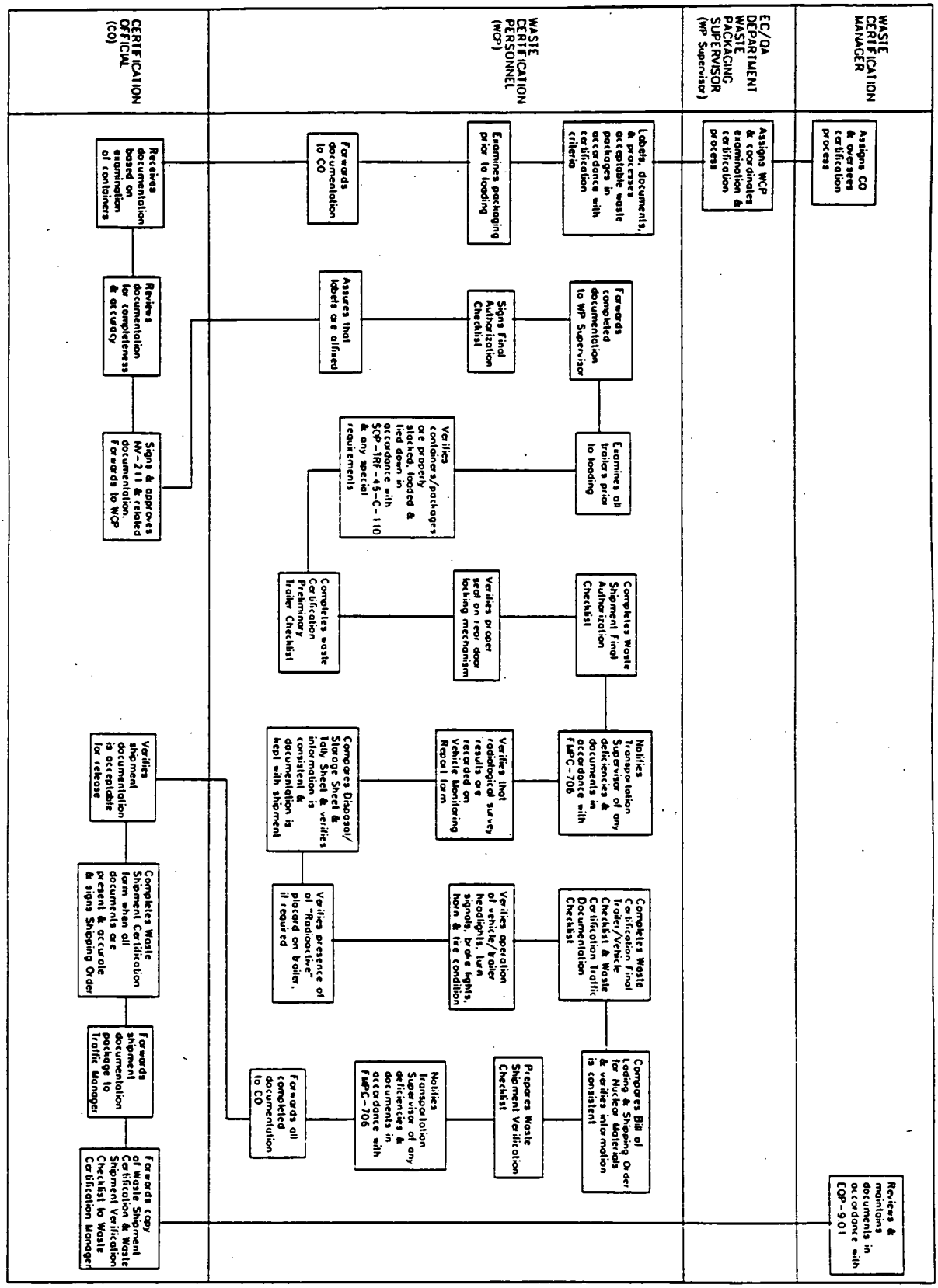
ISSUE AND REVISION RECORD

DATE OF CHANGE	REVISION NUMBER	AFFECTED PAGES	REASON FOR CHANGE
8/06/86	0	ALL	Original issue of the procedure
12/21/87	1	4	To include controls for record maintenance and retention periods.
7/24/91	2	ALL	To incorporate organizational changes, and update procedure throughout.
2/18/92	3	ALL	Upgraded to change survey requirements and limits also change site name.

WESTINGHOUSE MATERIALS COMPANY OF OHIO - FMPC		DOCUMENT NUMBER: EQP-12.04
RONMENTAL QUALITY PROCEDURE	SUBJECT: CERTIFICATION OF LOADING AND SHIPMENT OF LOW-LEVEL RADIOACTIVE WASTE	REVISION: 0
		Page 1 of 39
	AUTHORIZED: (Manager, Environmental Compliance & Quality Assurance) Allery D. Savage	Effective Date: 05/30/91

1.0 SCOPE

This procedure establishes a detailed method for the certification of Low-Level Radioactive Waste (L-LRW) packages (for additional abbreviations, acronyms, and definitions refer to EQP-1.05), the loading of L-LRW materials and the examination of highway transport vehicles for exclusive use shipments only at the Feed Materials Production Center (FMPC) to ensure compliance with applicable federal regulations.


WASTE CERTIFICATION MANAGER
EC/QA DEPARTMENT WASTE PACKAGING SUPERVISOR (WP Supervisor)
WASTE CERTIFICATION PERSONNEL (WCP)
CERTIFICATION OFFICIAL (CO)
Assigns CO & oversees certification process
Assigns WCP & coordinates examination & certification process
Labels, documents, & processes acceptable waste packages in accordance with certification criteria
Examines packaging prior to loading
Forwards documentation to CO
Receives documentation based on examination of containers
Forwards completed documentation to WP Supervisor
Signs Final Authorization Checklist
Assures that labels are affixed
Reviews documentation for completeness & accuracy
Examines all trailers prior to loading
Verifies containers/packages are properly stacked, loaded & tied down in accordance with SCP-TRF-45-C-110 & any special requirements
Signs & approves NW-211 & related documentation. Forwards to WCP
Completes Waste Shipment Final Authorization Checklist
Verifies proper seal on rear door locking mechanism
Completes waste Certification Preliminary Trailer Checklist
Notifies Transportation Supervisor of any deficiencies & documents in accordance with FMPC-706
Verifies that radiological survey results are recorded on Vehicle Monitoring Report form
Compares Disposal/ Storage Sheet & verifies information is consistent & documentation is kept with shipment
Verifies shipment documentation is acceptable for release
Completes Waste Certification Final Trailer/Vehicle Checklist & Waste Certification Traffic Documentation Checklist
Verifies operation of vehicle/trailer headlights, turn signals, brake lights, horn & tire condition
Verifies presence of of "Radioactive" placard on trailer, if required
Completes Waste Shipment Certification form when all documents are present & accurate & signs Shipping Order
Compares Bill of Lading & Shipping Order for Nuclear Materials & verifies information is consistent
Prepares Waste Shipment Verification Checklist
Notifies Transportation Supervisor of any deficiencies & documents in accordance with FMPC-706
Forwards all completed documentation to CO
Forwards shipment documentation package to Traffic Manager
Forwards copy of Waste Shipment Certification & Waste Shipment Verification Checklist to Waste Certification Manager
Reviews & maintains documents in accordance with EQP-901

2.0 PROCEDURE

2.1 Event Notification and Reporting Requirements

2.1.1 All unplanned or unwanted events or incidents shall be immediately reported to supervision. In the supervisor's absence the Assistant Emergency Duty Officer (AEDO) shall be notified for proper notification and reporting in accordance with topical manual, FMPC-2182, "Emergency and Non-Routine Event Notification and Reporting."

2.1.2 Supervision shall evaluate all unplanned or unwanted events or incidents for determination of reportability as a Minor Event in accordance with site procedure, FMPC-704, Minor Event Reporting System.

2.1.3 Any circumstance of event which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to supervision. The supervisor shall immediately report the circumstance of possible radioactive materials intake to Radiological Safety (RS) for evaluation.

2.2 Industrial Health and Safety Requirements

2.2.1 Leather palm gloves shall be worn when handling sharp-edged or abrasive materials, containers, lids and banding materials.

2.2.2 Safety glasses shall be worn by all personnel at all times posted areas, except when another type of eye protection equipment is specified.

2.2.3 Supervisors shall be responsible for contacting Industrial Hygiene for chemical air contaminants, or RS for radioactive contaminants, to determine appropriate respiratory protection. Determination of requirements shall be made in accordance with topical manual, FMPC-2128, Industrial Hygiene and Safety Manual.

2.2.4 Respirators, as determined required per 2.2.3, shall be available by supervision for each person working with waste material and shall be used in accordance with topical manual, FMPC-2084, Radiation Control Manual.

2.2.5 Any personnel involved with circumstances of an event which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall report to Medical Services to submit a urine sample at the end of their shift, or as directed by their supervision, and again at the start of their next shift.

2.3 General Requirements For Transporting L-LRW and LSA Waste

NOTE: EQP-12.03 must be completed prior to implementation of this procedure.

2.3.1 All certification personnel verifying packaging and shipment of L-LRW to the Nevada Test Site (NTS) shall be trained and qualified on this procedure, EQP-12.03, NVO-325, and the Waste Certification Program Plan in accordance with Quality Assurance Procedure EQP-6.04, Qualification of Waste Package Certifiers, or on Quality Assurance Procedure EQP-6.05, Qualification of Waste Certification Officials.

2.3.2 Materials prohibited by NVO-325 and/or listed on the "Prohibited Materials List" (Attachment A) shall not be packaged for shipment.

2.3.3 Only materials approved by NTS, Solid Waste Compliance and Waste Management shall be shipped. The Quality Department Waste Certification Manager is responsible for making this information available to all personnel performing verification and certification work.

2.3.4 Only container designs approved for shipment by the NTS that meet the requirements of NVO-325 and CFR 49 shall be used. For the purpose of this procedure only those container types verified as acceptable by the Waste Certification Manager, or another Certification Official, are to be used.

2.3.5 All packaging shall be in strong, tight containers that do not leak under normal transport and handling conditions, and which meet the criteria of Title 49 CFR 173.421 and 173.425.

2.3.6 White Metal box containers may not exceed 6000 lbs. maximum gross weight, wood box containers may not exceed 5000 lbs., 48 or 55 gallon drums may not exceed 1200 lbs. maximum gross weight, 85 gallon drums may not exceed 1000 lbs. maximum gross weight, 85 gallon overpacks may not exceed 1280 lbs. maximum gross weight, or as specified in EQP-12.03.

2.3.7 Marking and labeling shall be in accordance with Title 49 CFR 172, Subparts D & E, as follows:

a. Container Number
b. Shipment Number
c. Gross Weight
d. Radioactive markings
e. Other marking and labeling as required for the packaged material

2.3.8 Packages certified and held for shipment must be secure and protected from weather and other adverse conditions having the potential to create an unacceptable condition. Covered or enclosed storage, which includes covering with plastic or tarpaulin are appropriate protective measures. If appropriate measures have not been taken, all packages concerned shall be reexamined by Waste Certification Personnel and recertified on the basis of the reexamination results.

2.3.9 Beta/Gamma radiation levels shall not exceed 200 millirem/hour measured externally at the surface or 10 millirem/hour measured externally at one (1) meter in accordance with 49 CFR 173.441.

Alpha emitters	220 DPM/100 cm^2
Beta/Gamma emitters	2200 DPM/100 cm^2

2.3.10 No container leakage is permitted under normal transport conditions in accordance with 49 CFR 173.425.

2.4 Examination of Packages in Staging Area

This examination will be performed at the loading area by Waste Certification Personnel who have been properly trained in this procedure and NVO-325 prior to loading any packages into trailers for shipment to NTS. Results shall be documented on "Waste Shipment Final Authorization Checklist" (Attachment B).

2.4.1 Examination of Drums Prior to Loading

Examines sealed drums prior to loading on trailers for shipment to NTS. These drums are to be examined 100% by Waste Certification Personnel.

2.4.1.1 The lid shall be properly seated on the drum and held in place by a bolt ring closure. If bolt and flanges are not lower than rest of ring, then ring is positioned upside down.

2.4.1.2 Checks for red paint on ring bolt to indicate it has been tightened to 45 ($\pm$ 5) ft-lbs. using torque wrench (Attachment B).

2.4.1.3 Checks for safety wire threaded through hole in with the bolt head or threaded portion of bolt and around threaded portion of bolt ring and fastened (Attachment C). Check that jam nut is locked to opposite side of bolt head or threaded with flat side against ring harness.

2.4.1.4 Examines all surfaces of the drum and lid and reject for any of the following conditions.

a. A breach (a hole, crack, gash, etc.)
b. A dent or bulge which has creased, gouged, or may have otherwise significantly weakened the metal.
c. A dent greater than 1" in depth or extending over 6" in any direction.
d. A significant dent in the bottom rim. A significant dent is one that compromises the integrity of the container.
e. A significant dent in a rolling hoop which may affect the integrity of the container.
f. Rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container (small areas of exposed base metal, minor to moderate scratches, and slightly rusted spots are acceptable).

g. Any deformation or out-of-round condition affecting the integrity of the sealing surface.

2.4.1.5 Checks exterior of container for exposed bare metal requiring touch-up painting.

2.4.1.6 Checks exterior of drums for moisture.

2.4.1.7 Checks that the gross weight does not exceed 1200 lbs. and that it is marked in two inch (minimum) letters on each drum.

2.4.1.8 Checks labels and markings against "Storage & Disposal Data Sheet" (Attachment D), "Tally Sheet" (Attachment E) , and computer printout (Attachment F) "Circle Copy" for the particular shipment for weight and labels accuracy.

2.4.1.9 Notify Waste Operations Supervisor of any nonconformance found and checks that they are corrected prior to loading.

2.4.1.10 Apply "NV-211 Packaging Certification Label" to each package upon satisfactory examination (Attachment G).

2.4.2 Examination of Wood Boxes Prior to Loading

Examines wood boxes at the loading area prior to loading on trailers for shipment to NTS. These boxes are to be examined 100% by Waste Certification Personnel. Results shall be documented on "Waste Shipment Final Authorization Checklist" (Attachment B).

2.4.2.1 Checks for damage to the box and lid. No holes, cracks, or deterioration (i.e. rot) which would permit leakage or lessen the structural integrity of the box are acceptable.

2.4.2.2 No moisture is visible on either the inside or the outside of the box.

2.4.2.3 RTW Silicone Adhesive, or equivalent, has been applied in a continuous bead (1/4 inch minimum) between lid and box.

2.4.2.4 Box is banded vertically with three 1-1/4 inch metal bands, one band on each end of the box and one in the middle of the box.

2.4.2.5 Box lid shall be fastened using ten penny nails on 3 inch centers and two sixteen penny galvanized nails on each side panel into two inch by four inch on top panel (8 places) providing proper closure.

2.4.2.6 Box does not exceed 5000 pounds gross weight and that it is marked in two inch (minimum) letters on each box.

CHANGE NOTICE

OP-12.04-02	Effective Date: 9/30/91	Page 1 of 1

ORIZED: [illegible]

Revise section 2.4.3.7 (a) as follows:

2.4.3.7 Examines container for proper closure as follows:

a. Verifies that Radioactive material markings (top and two sides) and FEMP container number markings are present and legible. Shipment number, lot number and container identification number shall be clearly marked in one inch (minimum) letters using black waterproof ink.

2.4.2.7 Checks labels and markings against "Storage & Disposal Data Sheet" (Attachment D), "Tally Sheet" (Attachment E), and computer printout (Attachment F) "Circle Copy" for the particular shipment for weight and labels accuracy.

2.4.2.8 Notifies Waste Operations Supervisor of any nonconformance found and checks that they are corrected prior to loading.

2.4.2.9 Apply "NV-211 Packaging Certification Label" to each package upon satisfactory examination (Attachment G).

2.4.3 Examination of Metal Boxes Prior to Loading

Examines metal boxes at the loading area prior to loading on trailers for shipment to NTS. These boxes are to be examined 100% by Waste Certification Personnel. Results shall be documented on "Waste Shipment Final Authorization Checklist" (Attachment B).

2.4.3.1 Metal box must be a light color, usually white for Uranium contaminated rubble, gray for Thorium contaminated rubble.

2.4.3.2 Containers must be clean.

2.4.3.3 Each container shall be well constructed of steel with all seams adequately welded.

2.4.3.4 The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.

2.4.3.5 The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.4.3.6 For all box designs having drain plugs, verify that box has been checked for a drain plug, and if found the drain plug has been tightened.

a. A red dot on the lower left hand front of the box shall indicate that the plug has been tightened.
b. A black dot on the lower left hand front of the box shall indicate that there is no drain plug.
c. All metal boxes shall have either a red or black dot marked.

2.4.3.7 Examines container for proper closure as follows :

a. Verifies that Radioactive material markings (2 sides) and FMPC container number markings are present and legible. Shipment number, log number and container identification number shall be clearly marked in one inch (minimum) letters using black waterproof ink.

b. Verify that all unnecessary marking have been removed or covered.
c. Verify that gross weight does not exceed 6,000 pounds and that it is marked in two inch (minimum) letter on each box.
d. Verify that a foam rubber [illegible] type gask is in the sealing surface of the lid, or the lid is al with a durable sealant.
e. Verifies that lid is properly placed on the b .
f. Verifies locking pins required for the conta er in place with the locking notches below the st s a. fully engaged to full thickness of strap over en e locked surface edge of notch.
g. If the bolt type utilizes a bolted retainer ring, verify all bolts are securely in place.
h. Verifies the lid is secured with two 1-1/4" steel straps.

2.4.3.8 Checks labels and markings against "Storage & Disposal Data Sheet" (Attachment D), "Tally Sheet" (Attachment E), and computer printout (Attachment F) "Circle Copy" for the particular shipment for weight and labels accuracy.

2.4.3.9 Checks exterior of container for exposed bare metal requiring touch-up painting.

2.4.3.10 Notifies Waste Operations Supervisor of any nonconformance found and checks that they are corrected prior to loading.

2.4.3.11 Applies "NV-211 Packaging Certification Label" to each package upon satisfactory examination (Attachment G).

2.4.4 <u>Examination of Sea/Land Cargo Containers Prior to Loading</u>

Examines sea/land containers at the loading area prior to loading on trailers for shipment to NTS. These containers are to be examined 100% by Waste Certification Personnel. Results shall be documented on "Ready to Ship" Checklist (Attachment H).

2.4.4.1 Each container shall be well constructed of steel with all seams adequately welded.

2.4.4.2 The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.

2.4.4.3 The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.4.4.4 Verifies that the exterior of the sea/land is in good condition.

a. Verifies that all unnecessary markings have been removed or covered.

CHANGE NOTICE

EQP-12.04-01	Effective Date: 8/30/91	Page 1 of 1

AUTHORIZED: Allan D. Savage

Revise Section 2.5 as follows:

2.5 Examination of Package Markings and Labels

Immediately prior to transport loading, Waste Certification Personnel verify that the required markings and labels are applied to containers and grouped together. Marking and labeling in accordance with Title 49 CFR 172 Subparts D & E, is required as follows:

a. Each acceptable package shall have a "Radioactive LSA" label as required, form FMPC-T-1623 (Attachment I), if the surface dose rate exceeds 0.5 mR/hr. or the U-235 content exceeds 15 grams.

b. Each acceptable package shall have a "RADIOACTIVE-LIMITED QUANTITY" Label, FMPC-REST-1623-1 (Attachment I) if the surface does rate is equal to or less than 0.5 mR/hr. and the U-235 content is less than or equal to 15 grams.

c. Each package which contains 0.1 Curries or greater of Uranium must be labeled "RQ" in conjunction with the requirements of sections 2.5.a. and 2.5.b. (Attachment I).

d. Each acceptable package will have the letters "WML" and the shipment number on the package exterior. This may be either stenciling in one inch block or legible letters using black waterproof ink on bar code label.

e. Each acceptable package shall have a separate package number on the exterior. This may be either stenciling in one inch block or legible letters using black waterproof ink on bar code label.

f. Each acceptable package shall have the gross weight marked on the exterior. This may be either stenciling in two inch block or legible letters on bar code label.

g. Each acceptable package shall have the lot marking code marked on the exterior. This may be either stencilling in two inch block or legible letters on bar code label.

h. Each acceptable package shall have the waste stream number marked on the exterior. This may be either stenciling in two inch block or legible letters on bar code label.

i. Each package certified as acceptable for NTS disposal shall have a required "NV-211 Packaging Certification Label," FMPC-Q&S-234 or FMPC-Q&S-234-1 (Attachment G), affixed after examination of the package and shortly before or during loading. The label shall be displayed on the side of the package in a group pattern with other labels and markings.

b. Verifies that caulking is around all doors and around all sealing surfaces, and that the metal doors are securely closed, and two metal bands secure the two door latches together.

c. Verifies gross weight of sea/land and that it is marked in two inch (minimum) letters on each sea/land.

d. Verifies that Radioactive material markings (2 sides) and FMPC container number markings are present and legible. Shipment number, log number and container identification number shall be clearly marked in one inch (minimum) letters using black waterproof ink.

e. If Sea/Land container is top loading, verifies that a foam rubber or similar type gasket is on the sealing surface of the lid, or the lid is sealed with a durable sealant.

f. Verifies that the sea/land container has been painted.

2.4.4.5 Checks labels and markings against "Storage & Disposal Data Sheet" (Attachment D), "Tally Sheet" (Attachment E), and computer printout (Attachment F) "Circle Copy" for the particular shipment for weight and labels accuracy.

2.4.4.6 Apply "NV-211 Packaging Certification Label" to each package upon satisfactory examination. (Attachment G)

2.4.5 <u>Examination of Bales Prior to Loading</u>

Examines bales at the loading area prior to loading on trailers for shipment to NTS. Bales are to be examined 100% by Waste Certification Personnel. Results shall be documented on "Waste Shipment Final Authorization Checklist" (Attachment B).

2.4.5.1 Verifies that each bundle of trash is properly constructed:

a. Consists of two bales of trash covered with Flex-Iron Bulk Bags or equivalent.

b. Each bag covered bale is mounted on a wood pallet.

c. Two of these subparts are stacked one on top of each other and a third wood pallet is positioned on top.

d. Two 1-1/4 inch straps of banding are wrapped around to secure the bundle and tightened with banding clips.

e. Cardboard strips are positioned to keep the metal banding strips from cutting into the bales.

f. Checks baled trash package for holes, tears, water leaks, and defects.

2.4.5.2 Verifies the top wood pallet is labeled with the shipment number and bundle number in one inch letters.

2.4.5.3 Verifies that markings are legible and waterproof ink has been used.

2.4.5.4 Verifies that the gross weight is marked on the top wood pallet

2.4.5.5 Checks labels and markings against "Storage & Disposal Data Sheet" (Attachment D), "Tally Sheet" (Attachment E), and computer printout (Attachment F) "Circle Copy" for the particular shipment for weight and labels accuracy.

2.4.5.6 Notifies Waste Operations Supervisor of any nonconformance found and Checks that they are corrected prior to loading.

2.4.5.7 Applies "NV-211 Packaging Certification Label" to each package upon satisfactory examination (Attachment G).

2.5 Examination of Package Markings and Labels

Immediately prior to transport loading, Waste Certification Personnel verify that the required markings and labels are applied to containers and grouped together. Marking and labeling in accordance with Title 49 CFR 172 Subparts D & E, is required as follows:

a. Each acceptable package shall have a "Radioactive LSA" label as required, form FMPC-T-1623 (Attachment I), if the surface dose rate exceeds 0.5 mR/hr. or the U-235 content exceeds 15 grams.
b. Each acceptable package shall have a "RADIOACTIVE-LIMITED QUANTITY" Label, FMPC-REST-1623-1 (Attachment I) if the surface does rate is equal to or less than 0.5 mR/hr. and the U-235 content is less than or equal to 15 grams.
c. Each package which contains 0.1 Curries or greater of Uranium must be labeled "RQ" in conjunction with the requirements of sections 2.5.a. and 2.5.b. (Attachment I).
d. Each acceptable package will have the letters "WML" and the shipment number on the package exterior. This may be either stenciling in one inch block or legible letters using black waterproof ink on bar code label.
e. Each acceptable package shall have a separate package number on the exterior. This may be either stenciling in one inch block or legible letters using black waterproof ink on bar code label.
f. Each acceptable package shall have the gross weight marked on the exterior. This may be either stenciling in two inch block or legible letters on bar code label.
g. Each package certified as acceptable for NTS disposal shall have a required "NV-211 Packaging Certification Label," FMPC-Q&S-234 or FMPC-Q&S-234-1 (Attachment G), affixed after examination of the package and shortly before or during loading. The label shall be displayed on the side of the package in a group pattern with other labels and markings.

2.6 Documentation of Examination and Deviations

Immediately prior to transport loading, Waste Certification Personnel assure that all examinations are properly documented on the applicable checklist, as required; assures that nonconforming conditions are documented and processed as follows:

2.6.1 Any deviations observed should be documented on the appropriate checklist.

2.6.2 Any waste package rejected due to non-acceptable or non-authorized contents or physical damage to the containers shall have a nonconformance tag attached to it as identification (See FMPC-706). Deviations shall be corrected prior to affixing "NV-211 Packaging Certification Label." Uncorrectable deviations or lack of prompt or appropriate action, or chronic and/or systematic errors must be documented on a Deviation or Corrective Action Report in accordance with FMPC-706.

2.6.3 Any waste packages rejected due to improper labeling or identification shall be corrected prior to affixing a "NV-211 Packaging Certification Label." If no acceptable solution can be defined, a nonconformance tag shall be attached and a Deviation Report shall be issued in accordance with FMPC-706.

2.6.4 Forwards appropriate forms and documentation to Certification Official for review, approval, and certification.

NOTE: Disposal of any rejected containers, lids, bolt rings, or lever rings shall be the responsibility of Waste Operations or the generator of the package.

2.7 Preliminary Certification

Waste Certification Personnel examine the transport trailer prior to loading and completes the appropriate checklist.

2.7.1 Examines the transport trailer/vehicle as follows:

2.7.1.1 Verifies that the RS Technician has surveyed each trailer/vehicle prior to loading and has recorded results on the "Vehicle Radiation Monitoring Report," form FMPC-ES&H-1596-1 (Attachment J), to ensure that radiation and contamination levels do not exceed the requirements listed in 49 CFR 173.441.

2.7.1.2 Determines the condition of the trailer/vehicle by examining the trailer/vehicle floor, interior, roof, roof interior, rear door, rear door gasket, and tires. Any of the following conditions shall be brought to the attention of the Traffic Manager:

a. holes or "soft" areas in floor or roof which would allow possible leakage and/or jeopardize the structural integrity of the trailer/vehicle
b. liquid or oily substances on interior surfaces
c. non-securing or poor sealing rear doors
d. tires
   1. insufficient tread (2/32" min. trailer, 4/32" min. tractor)
   2. separation of tread
   3. punctures
   4. bulges
   5. underinflated (use manufacturer's recommended pressure, cold)
   6. flats

2.7.1.3 Examines the lining of trailer/vehicle for compacted baled trash and verifies that the floor and approximately three (3) feet up the side and rear walls are covered with plastic sheet, and that the floor is covered with single-faced cardboard or approved equivalent.

2.7.1.4 Completes the "Waste Certification Preliminary Trailer Checklist" (Attachment K) or the "Waste Certification Preliminary Trailer Checklist (Sea/Lands)" (Attachment L).

2.8 Examination of Drums

Waste Certification Personnel examine drums at loading and verifies that drums have been properly stacked, loaded and tied down in accordance with SOP-TRF-46-C-110 and that the following requirements have been met:

2.8.1 Drummed materials requiring proper weight distribution have been placed into the vehicle split into two groups:

a. the front unit is encircled with 1-1/4" steel strapping, connected with two clips, double-crimped, and 2 x 4 wood shoring nailed to the floor behind the unit.
b. the rear unit is placed so as the proper weight distribution is maintained and a wood picket brace is constructed at the front of the group. Drums behind the picket brace are encircled with 1-1/4" steel strapping connected with two clips, double-crimped, and providing no metal plate is directly behind the group, 2 x 4 wood shoring is nailed to the floor behind the group.

2.8.2 Double-decked drummed material has been loaded in a similar manner as paragraph 2.8.1, except for the following:

a. the floor is loaded solid,
b. a piece of plywood has been placed on the top of the first deck and the second deck of drums has been loaded from the front to the rear. Both rows of drums have been encircled with 1-1/4" steel strapping, with two clips, double-crimped,
c. two-by-four wood shoring has been nailed to the floor behind the first deck of drums, if no metal plate is directly behind the drums.

2.9 Examination of Metal Boxes

Waste Certification Personnel examine metal boxes at trailer loading and verifies they are not damaged, that metal boxes have been loaded and tied down in accordance with SOP-TRF-46-C-110 and that the following requirements have been met:

2.9.1 Metal Boxes have been placed into the vehicle correctly for proper weight distribution. Normally, these shipments contain either seven (7) to ten (10) containers. With seven (7) containers a split of three (3) in the front unit and four (4) in the rear unit is required. Ten (10) containers are to be loaded straight down the center of the vehicle floor. When the number of containers making up the shipment are not seven (7) or ten (10), they are to be loaded them in the same manner as for seven (7).

2.9.2 Front Unit (2-5 boxes) were shored using two sets of brakeman plates nailed to the floor of the vehicle (prior to loading) with 1-1/4" steel strapping threaded through each plate. Two of these units are used to encircle each load unit (2 bands) and shall be tightened and fastened with two clips, double-crimped. The bands have plastic protectors on the edges of the first and last container to keep the bands from breaking.

2.9.3 Rear Unit (2-5 boxes) has been shored using 2" X 4" brace in front of the containers. Use same method of steel banding as on the front unit.

2.9.4 The shoring of ten (10) metal boxes has been accomplished using the same steel banding method as used for seven (7). The first five (5) have been banded as one unit, and the last five (5) as one unit.

2.10 Examination of Wooden Boxes

Waste Certification Personnel examine wooden boxes at loading and verifies they are not damaged and that wooden boxes are properly stacked, loaded and tied down in accordance with SOP-TRF-46-C-110 and that the following requirements have been met:

2.10.1 Wooden boxes have been placed into the vehicle for proper weight distribution. Normally, these shipments consist of sufficient numbers to require partial double-decking. When double-decking is required the double stacks shall be banded together prior to loading.

2.10.2 Two sets of brakeman plates have been nailed to the floor (set on top of the plastic and cardboard) in the front and rear section of the vehicle with 1-1/4" steel strapping threaded through each plate.

2.10.3 Boxes are loaded straight down the center of the vehicle floor.

2.10.4 Two (2) bands have been used to encircle the first six (6) boxes as one unit and the last five (5) as one unit.

2.11 Examination of Compacted Baled Trash

2.11.1 Waste Certification Personnel examine compacted baled trash at loading and verifies that compacted baled trash has been properly stacked, loaded and tied down in accordance with SOP-TRF-46-C-110 and that the following requirements have been met:

2.11.1.1 Compacted bales of trash placed for proper weight distribution have been double stacked and loaded straight down the center of the vehicle floor. Normally, these shipments consist of twenty-two (22) bales (11 packages) of compacted trash.

2.11.1.2 Two sets of brakeman plates have been nailed to the floor (set on top of the plastic and cardboard) in the front and rear section of the vehicles with 1-1/4" steel strapping threaded through each plate. Six side cleats with 1-1/4" steel strapping have been nailed to the floor on both sides of the vehicle for cross banding of the bales.

2.11.1.3 After the first five double stacks of bales have been loaded, the front unit has been encircled with steel strapping and the bands tightened and fastened with two clips, double-crimped.

2.11.1.4 Cross bands have been placed over stack numbers one, three, and five. Single-faced cardboard has been folded for a minimum of 4-ply protection and placed under the bands of the top bales plastic enclosure. The bands have been tightened and fastened with two clips double-crimped.

2.11.1.5 The rear section has been banded in the same manner as the front section except that cross bands have been placed over bale numbers seven, nine and ten.

2.12 Examination of Sea/Land Cargo Containers

Waste Certification Personnel examine Sea/Land container at loading, checks the maximum gross weight on container with actual gross weight, and verifies that container has been loaded and tied down in accordance with SOP-TRF-46-C-110 and that the following requirements have been met:

2.12.1 Sea/Land containers have been placed onto a flat bed truck for proper axle-weight distribution. For a shipment consisting of one container, the doors of the container shall be facing the rear of the truck. For a shipment consisting of two containers the doors of the front unit shall be facing to the rear and the rear unit shall be facing the front of the truck.

2.12.2 If the container or shipment exceeds 42,000 gross pounds, a waiver must be approved by the Manager, Transportation Regulatory Compliance and Certification Official as to whether or not it may be shipped. A copy of the appropriate letter will be attached to the "Ready to Ship" Checklist when it is prepared during the check of incoming paperwork.

2.12.3 Containers have been secured to the flatbed truck with four (4) nylon straps over each unit secured to the frame of the trailer, chains have been placed and secured in front of and behind the bottom of each container fastened to the trailer bed, and a 2 x 4 has been nailed to the trailer floor at the rear of each unit.

2.13 General Examination Activities After Loading

Waste Certification Personnel shall conduct the following activities after the trailer has been loaded:

NOTE: Two (2) photographs of the packages shall be taken prior to closing the doors of the trailer. Photos are also required of flat bed loads. Include information on shots to be taken.

2.13.1 Verifies that the trailer is locked or a numbered tamper-indicating seal is applied to the rear door locking mechanism whenever the trailer is unattended overnight or for any other extended period. If a seal or lock is not used prior to resumption of loading or closure of the van, an examination shall be made to verify that the packages previously loaded were not disturbed and no unauthorized packages or materials were placed in the shipment.

2.13.2 Completes the examination of the loaded trailers for NTS shipments and completes the "Waste Shipment Final Authorization Checklist" (Attachment B).

2.13.3 Reports, by copy of the appropriate checklist, any deficiencies to the Transportation Supervisor for correction. Checklists which include deficiencies are recorded and tracked on a deficiency log. Documents any repetitive or uncorrected deficiencies in accordance with FMPC-706.

2.13.4 Forwards all completed documentation to the the individual who will be making the final inspection at Traffic prior to release of the trailer.

2.14 Final Trailer/Vehicle Examination

Waste Certification Personnel conduct a final examination of the vehicle/trailer after closure as follows:

2.14.1 Verifies that the shipment, associated paperwork and transport vehicle is acceptable for release.

2.14.2 Verifies that RS Technician has surveyed the trailer/vehicle and recorded the results on the "Vehicle Radiation Monitoring Report," form FMPC-ES&H-1596-1 (Attachment J), and that these results are within specification.

2.14.3 Compares the "Storage & Disposal Data Sheet" (Attachment D) with the "Bill of Lading" (Attachment M) to verify that the following information is correct:

a. Number and type of containers
b. Total curie content
c. Shipment gross and net weight
d. Shipment number

2.14.4 Verifies that an envelope containing copies of the "Tally Sheet," "Storage & Disposal Data Sheet" (refer to EQP-12.03), and LSA/RQ, LQ (Limited Quantity) documentation of the shipment is fastened to the rear container when possible or stapled to the trailer wall inside of the trailer doors for NTS use upon opening the trailer at the destination. If the shipment is not in a closed van, verifies that the "Tally Sheet" and "Storage & Disposal Data Sheet" are in the envelope which is to be delivered by the driver.

2.14.5 Verifies the presence of "Radioactive" placard on both sides, front and rear of vehicle/trailer.

NOTE: A shipment containing limited quantity packages exclusively does not require these placards.

2.14.6 Verifies that the following are operational on the vehicle/trailer. Completes the "Waste Certification Final Trailer/Vehicle Checklist" (Attachment N).

a. Headlights
b. Turn signals
c. Brake lights
d. Horn
e. Tire condition, per section 2.7.1.2 of this proce

2.14.7 Compares the "Bill of Lading" (Attachment M) and the "Shipping Order for Nuclear Material," form FMPC-CONT-558 (Attachment O), to verify the following:

a. Trailer Number
b. Shipment Number
c. Gross Wt. and Net Wt.
d. Bill of Lading Number
e. Shipping Order Number
f. Seal Number
g. Lot Number
h. Container Number (for Sea/Land containers)

2.14.8 Verifies that a seal has been placed on the trailer and that the trailer number and the seal number match the seal number recorded on the "Bill of Lading" (Attachment M), and reviews the "LLW Shipment Checklist" (Attachment Q), and the "Off-Site Loading Tie-Down Inspection-Vehicle Inspection" Form (Attachment S).

2.14.9 Completes the "Waste Certification Final Trailer/Vehicle Checklist" (Attachment N), and "Waste Certification Traffic Shipment Documentation Checklist" (Attachment P).

2.14.10 Verifies that the gross weight on all documentation is within 100 lbs. of actual.

2.14.11 When instructed, completes the "Waste Shipment Verification Checklist" (Attachment T), for the Certification Official by verifying the following information:

a. Radiation Monitoring Sheets
b. Off-Site Tie Down Inspection/Vehicle Inspection Form
c. Weight Ticket
d. Shipping Order
e. Bill of Lading
f. Disposal/Storage Sheet
g. Tally Sheet
h. Radiological Survey Report
i. LLW Shipment Checklist

j. Sea/Land Container "Ready to Ship" (If applicable)
k. Waste Certification Preliminary Trailer Checklist
l. Waste Certification Traffic Shipment Documentation Checklist
m. Waste Certification Final Trailer/Vehicle Checklist
n. Item Production/Certification/Identification Card

2.14.12 Reports all deficiencies on the appropriate checklist. Repetitive or uncorrected deficiencies are documented in accordance with FMPC-706.

NOTE: Uncorrected deviations must be resolved before Quality Department can provide a release of the shipment.

2.14.13 Notifies the Certification Official that shipment paperwork is complete and available for final review.

2.14.14 Forwards completed documentation to Waste Certification Manager who reviews and maintains documents in accordance with WMCO-QAP-9.01.

3.0 REFERENCES

3.1 NVO-325, Nevada Test Site Defense Waste Acceptance Criteria, Certification and Transfer Requirements
3.2 FMPC-503, FMPC Spill Incident Reporting and Cleanup
3.3 FMPC-704, Minor Event Reporting System
3.4 EQP-1.05, Abbreviations, Acronyms, and Definitions
3.5 EQP-6.04, Qualification of Waste Package Certifiers
3.6 EQP-6.05, Qualification of Waste Certification Officials
3.7 FMPC-706, Deviation and Corrective Action Reporting
3.8 EQP-9.01, Designation, Preparation, Storage and Maintenance of Quality Documents
3.9 EQP-12.03, Certification of Waste Package Examination and Sealing for Off-Site Shipment
3.10 SOP-TRF-46-C-110, Preparation and Shipment of Radioactive Material (Low-Level Waste)
3.11 SOP 20-C-601, Packaging Low Level Radioactive Waste (L-LRW) for Offsite Disposal
3.12 SOP 1-C-602, Low Level Radioactive Waste (L-LRW) Shipment Preparations

4.0 ATTACHMENTS

4.1 Attachment A, Prohibited Materials List
4.2 Attachment B, Waste Shipment Final Authorization Checklist
4.3 Attachment C, Bolt Diagram
4.4 Attachment D, Storage & Disposal Data Sheet
4.5 Attachment E, Tally Sheet
4.6 Attachment F, Computer Printout - "Circle Copy"
4.7 Attachment G, NV-211 Packaging Certification Labels

4.8	Attachment H,	"Ready to Ship" Checklist (for Sea/Lands)
4.9	Attachment I,	Radioactive-LSA, Radioactive-Limited Quantity, & "RQ" Labels
4.10	Attachment J,	Vehicle Radiation Monitoring Report
4.11	Attachment K,	Waste Certification Preliminary Trailer Checkl
4.12	Attachment L,	Waste Certification Preliminary Trailer Checkl Sea/Lands)
4.13	Attachment M,	Bill of Lading
4.14	Attachment N,	Waste Certification Final Trailer/Vehicle Che ist
4.15	Attachment O,	Shipping Order for Nuclear Material
4.16	Attachment P,	Waste Certification Traffic Shipment Docume tion Checklist
4.17	Attachment Q,	LLW Shipment Checklist
4.18	Attachment S,	Off-Site Loading Tie-Down Inspection-Vehicle Inspection Form
4.19	Attachment T,	Waste Shipment Verification Checklist

PROHIBITED MATERIALS LIST

Nonradioactive Material

Pressurized Vessels

Explosives

Radioactive Gases

High-Level Waste

Pyrophoric Materials

Toxic or Poisonous Materials

Liquid Materials

Flammable Substances

Alkaline Metals

Reactive Materials (could cause fire)

Liquid Organic Waste or Waste that contains any Free Liquid

Ashes, Dry Powders or Respirable Fines (unless immobilized or a double containment package is used)

If the Waste is Ionized or Immobilized the pH must be greater than 4

Attachment B
Page 1 of 2

WASTE SHIPMENT FINAL AUTHORIZATION CHECKLIST

WASTE SHIPMENT FINAL AUTHORIZATION CHECKLIST

Page 1 of

SHIPMENT NUMBER: WML-_____

WASTE DESCRIPTION: _____

Waste Package Description:

Package Type _____

Number of Packages _____ Verified by (Initials) _____

VERIFICATION CRITERIA PER QAP 12.09

Verify the following:

1. Information on packages matches REECO Radioactive Waste Management - Storage & Disposal Sheet (Circle Copy) and no inappropriate information present on packages. _____
2. No unauthorized materials loaded. _____
3. No free liquids on or emitting from packages. _____
4. No significant package defects such as dents, rust, holes, cracks, or tears (baled trash). _____
5. Proper closure of container lid. _____
6. Packages are free of adhering or entrapped soil, debris, etc. _____

Verify the following where applicable:

Drums: Presence of safety wire on bolts. _____

Locking nut tightened (red paint on bolt). _____

Lid and ring are seated properly. _____

Wood boxes: Lid nailed and secure, adequate caulking, and three 1 1/4" metal bands present (one on each end and one in middle) and secure. _____

Holes drilled in false bottom, runners secure and no severly bowed sides or liquid seepage. _____

Metal boxes: Required number of wedge type locking pins are fully engaged catching lower edge of locking strap and are at least even with locking strap. _____

Two 1 1/4" metal bands are banded tightly with two banding clips on each band equidistant from center around package. _____

Presence of a red dot (drain plug exists) or a black dot (no drain plug). _____

WASTE SHIPMENT FINAL AUTHORIZATION CHECKLIST (continued)

Existance of gasket around lid when possible. _____

Open holes in runners. _____

Baled trash: Two 1 1/4" metal bands and two banding clips on each band strapped evenly and tightly completely around the outside of the closed sides of the top and bottom pallets. _____

Corrugated cardboard present on top of bale and under banding in area of band/pallet contact. _____

Shipment information located on the top pallet of each bundle. _____

Verify shipment number, FMPC, and package number are stenciled in 1-inch block letters located on top center and on the side of all packages except for baled trash (sides only). _____

LOADING INFORMATION

Verify presence of the following labels:
DOT Radiation Labels, Radioactive LSA and LQ/RQ as applicable. _____

Package containing asbestos require asbestos label, ORM-C. RQ should be stenciled next to ORM-C only when quantity of asbestos meets EPA and 49 CFR reportable quantity limits. _____

NV-211 label dated and signed by an authorized package certifier. _____

Verify the loading of the shipment concurs with the criteria established in SOP TFR-46-C-110, Section 6.1. _____

Shipment Number Loaded:_____ Time:_____ Date:_____

Trailer Number:_____ Seal Number:_____

I hereby certify that the above checklist has been completed and witness that the above items are correct to the best of my knowledge.

Signed:_____ Date:_____
QA Waste Packaging

Comments:_____

_____

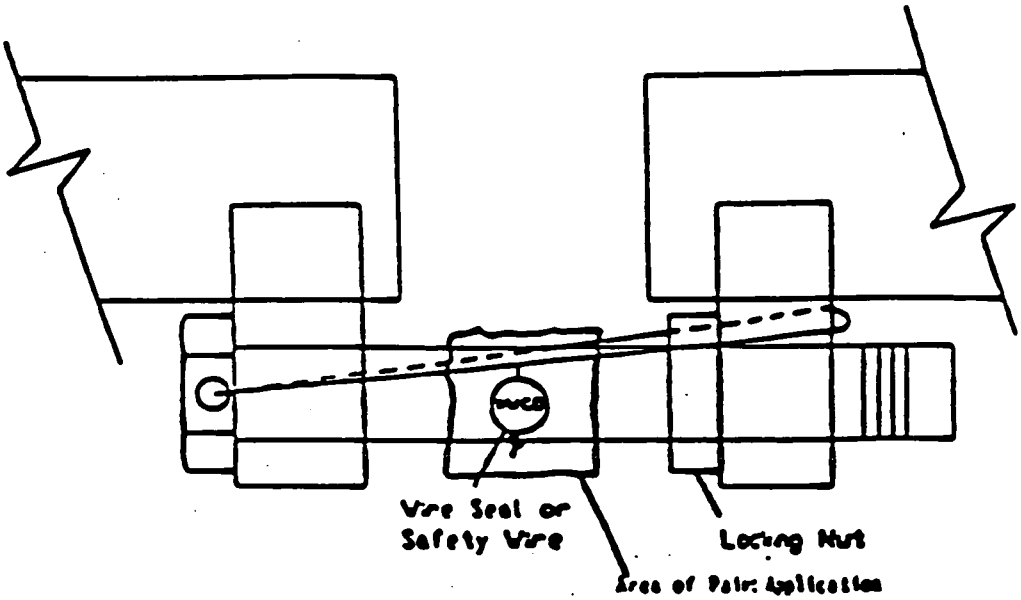
Signed:_____ Date:_____
Waste Operations Supervisor

Copies to :Waste Certification Files
Waste Operations (original)

QAC-881115-1, Rev. 1 (03/01/90)

Attachment C
Page 1 of 1

BOLT DIAGRAM



3511

Attachment D
Page 1 of 1

STORAGE & DISPOSAL DATA SHEET

WAL-90 091

02/27/90
14:50:10

Reynolds Electrical and Engineering Co., Inc.
Radioactive Waste Management-Storage & Disposal

DESCRIPTION: Construction Rubble
Maintenance Rubble

Prepared by: [signature]
Date 2/27/90 Area Code Phone FTS 774-8647

Approved: Responsible Personnel [signature]
Date 2-27-90 Area Code Phone FTS 774-8647

SECTION 1

CARD	SHIPMENT NUMBER (2–9)	O (10)	C (11)	D (12)	S (13)	O (14)	FY (15)	YR (16)	O (17)	NUCLIDE CATEGORY (25)	CURIE QUANTITY (26–34)	C (35)	GROSS VOLUME (36–44)	F (45)	GROSS WT(lbs) (46–54)	P (55)	OVERPACKS
																	0 BOXES
																	10 DRUMS
2	WAL90091	O	W	L	O	B	9	0	2	2	2.795E-04		1.020E+03		2.461E+04		
											0.0002794		1020.00		24605.0		0 OTHER

SECTION 2

CARD	NUCLIDE DESCRIPTION (2–15)	QUANTITY (16–24)	C (25)	S (26)	COMMENTS (27)
3	U-238	2.707E-04	C	1	810 GRAMS
3	U-235	8.754E-06	C	2	4 GRAMS

SECTION 3

CARD	WASTE CODE (23)	VOLUME CU.FT. (4–12)	F (13)	% COMB. (14–16)	WEIGHT LBS. (17–25)	P (26)	S (27)	COMMENTS (28)
4	DD	8.160E+02	F	0	1.804E+04	P	1	835
4	DD	2.040E+02	F	0	6.570E+03	P	2	841

SECTION 4

CARD	CONT NUMBER	ASSAY DATE	CLASS CODE	CONT/AT CODE	GROSS WEIGHT LBS	GROSS VOLUME CU.FT.	RADIATION AT SURF mrem/hr	RADIATION AT 3 FT mrem/hr	PRIMARY ELEMENT & ISOTOPIC	PRIMARY CURIE QUANTITY	SECONDARY ELEMENT & ISOTOPIC	SECONDARY CURIE QUANTITY	PRIMARY ISOTOPE WEIGHT GRAMS	SECONDARY ISOTOPE WEIGHT GRAMS
6/7	1	05/09/89	2122	8352122	1674.0	102.00	0.30	0.30	U-238	1.5039E-05	U-235	4.8630E-07	45	0.2
6/7	2	05/09/89	2122	8352122	1875.0	102.00	0.30	0.30	U-238	1.5039E-05	U-235	4.8630E-07	45	0.2
6/7	3	05/09/89	2122	8352122	1674.0	102.00	0.30	0.30	U-238	1.5039E-05	U-235	4.8630E-07	45	0.2
6/7	4	05/09/89	2122	8412122	2930.0	102.00	0.30	0.30	U-238	3.0079E-05	U-235	9.7270E-07	90	0.5
6/7	5	05/09/89	2122	8352122	4293.0	102.00	0.30	0.30	U-238	6.0158E-05	U-235	1.9454E-06	180	0.9
6/7	6	05/09/89	2122	8352122	1537.0	102.00	0.30	0.30	U-238	1.5039E-05	U-235	4.8630E-07	45	0.2
6/7	7	05/09/89	2122	8352122	2923.0	102.00	0.30	0.30	U-238	3.0079E-05	U-235	9.7270E-07	90	0.5
6/7	8	05/09/89	2122	8412122	3640.0	102.00	0.30	0.30	U-238	4.5118E-05	U-235	1.4590E-06	135	0.7
6/7	9	05/09/89	2122	8352122	1300.0	102.00	0.30	0.30	U-238	1.5039E-05	U-235	4.8630E-07	45	0.2
6/7	10	05/09/89	2122	8352122	2759.0	102.00	0.30	0.30	U-238	3.0079E-05	U-235	9.7270E-07	90	0.5

Attachment E
Page 1 of 1

TALLY SHEET

MAR-90 091 02/27/90
14:50:01

TO: Reynolds Electric and Engineering Co., Inc.
U.S. DOE, Nevada Test Site, Zone 2
Mercury, NV 89023
Attention: G. Kendall

NEVADA TEST SITE SHIPMENT
TALLY SHEET
LOT NUMBER W050-100-P003-9023
LOT NUMBER W050-100-P003-A334

FROM: Westinghouse Materials Company of Ohio
P. O. Box 398704
Cincinnati, OH 45239

LOT NUMBER	CONT. NO.	GROSS WT. (POUNDS)	TARE WT. (POUNDS)	NET WT. (POUNDS)	U ASSAY	PERCENT U-235	PERCENT U-238	U POUNDS	ELEMENT WT(gms)	U-235 ISOTOPE WT(gms)	U-238 ISOTOPE WT(gms)	U-235 Ci	U-238 Ci	VOLUME CU FT
A334	1	1674.0	630.0	1044.0	0.010	0.500	99.48	0.1	45	0.2	45	4.8630E-07	1.5039E-05	102.00
A334	2	1875.0	630.0	1245.0	0.010	0.500	99.48	0.1	45	0.2	45	4.8630E-07	1.5039E-05	102.00
A334	3	1674.0	630.0	1044.0	0.010	0.500	99.48	0.1	45	0.2	45	4.8630E-07	1.5039E-05	102.00
9023	4	2930.0	630.0	2300.0	0.010	0.500	99.48	0.2	91	0.5	90	9.7270E-07	3.0079E-05	102.00
A334	5	4293.0	630.0	3663.0	0.010	0.500	99.48	0.4	181	0.9	180	1.9454E-06	6.0158E-05	102.00
A334	6	1537.0	630.0	907.0	0.010	0.500	99.48	0.1	45	0.2	45	4.8630E-07	1.5039E-05	102.00
A334	7	2923.0	630.0	2293.0	0.010	0.500	99.48	0.2	91	0.5	90	9.7270E-07	3.0079E-05	102.00
9023	8	3640.0	630.0	3010.0	0.010	0.500	99.48	0.3	136	0.7	135	1.4590E-06	4.5118E-05	102.00
A334	9	1300.0	630.0	670.0	0.010	0.500	99.48	0.1	45	0.2	45	4.8630E-07	1.5039E-05	102.00
A334	10	2759.0	630.0	2129.0	0.010	0.500	99.48	0.2	91	0.5	90	9.7270E-07	3.0079E-05	102.00
TOTALS		24605.0	6300.0	18305.0				1.8	815	4.1	810	8.7540E-06	2.7071E-04	1020.00
					--- LOT TOTALS ---									
9023	2	6570.0	1260.0	5310.0				0.5	227	1.1	226	2.4317E-06	7.5197E-05	204.00
A334	8	18035.0	5040.0	12995.0				1.3	590	2.9	587	6.3223E-06	1.9551E-04	816.00

3511

Attachment F
Page 1 of 1

COMPUTER PRINTOUT - "CIRCLE COPY"

WML-90 091

Reynolds Electrical and Engineering Co., Inc.
Radioactive Waste Management-Storage & Disposal

PACKAGE NO.	NET WT	TARE WT	GROSS WT	LSA	LQ	RQ
1	1044.00	630.00	1674.00	X		
2	1245.00	630.00	1875.00	X		
3	1044.00	630.00	1674.00	X		
4	2300.00	630.00	2930.00	X		
5	3663.00	630.00	4293.00	X		
6	907.00	630.00	1537.00	X		
7	2293.00	630.00	2923.00	X		
8	3010.00	630.00	3640.00	X		
9	670.00	630.00	1300.00	X		
10	2129.00	630.00	2759.00	X		

Attachment G
Page 1 of 1

NV-211 PACKAGING CERTIFICATION LABELS

NV-211 **PACKAGING CERTIFICATION**

This certifies that this container and its contents are in acceptable condition for transportation and waste disposal according to DOT (49 CFR), EPA (40 CFR), and DOE/NV (NVO-325) requirements.

DATE: _____

CERTIFIED BY: _____

TITLE: CERTIFICATION OFFICIAL

ORGANIZATION: FMPC

FMPC-O&S-234 (REV. 9/7/89)

NV-211 **PACKAGING CERTIFICATION**

This certifies that this container and its contents are in acceptable condition for transportation and waste disposal according to DOT (49 CFR), EPA (40 CFR), and DOE/NV (NVO-325) requirements.

DATE: _____

CERTIFIED BY: _____

TITLE: PACKAGE CERTIFIER

ORGANIZATION: FMPC

FMPC-O&S-234-1 (REV. 9/7/89)

3511

Attachment H
Page 1 of 1

"READY TO SHIP" CHECKLIST (FOR SEA/LANDS)

WASTE CERTIFICATION CHECKLIST
SEA LAND CONTAINER
"READY TO SHIP"

INFORMATION (Waste Operations)

DATE: _____ SHIPMENT NUMBER: _____

MTL. TYPE: _____ BOX ___ S/N: _____

MTL. TYPE: _____ ___ _____

LOCATION : _____ WEIGHTS: Gross _____ BOX 1 _____ BOX 2

_____ Tare _____ _____

_____ Net _____ _____

EXAMINATION CRITERIA (Waste Certification)

Trailer No.: _____ Initials

0. Verify "Item Production/Certification/Identification" XX card is completed accurately. Form Number FMPC-ES&H-1945-XX. _____
1. Radioactive material markings present. (2 sides) _____
2. Container Number-FMPC marking present. _____
3. All unnecessary markings have been removed or covered. _____
4. Marking is complete as follows:
   Proper shipping label(s) identified (LSA, RQ, LQ) _____
   Gross weight identified _____
5. Marked weight values match above values. _____
6. The box door has been sealed by caulking and a metal band is attached to both door latches. _____
7. Seal number _____ affixed to container. _____

PLACE NV-211 ON DOOR OF CONTAINER WHEN ABOVE CRITERIA IS SATISFACTORILY MET.

CERTIFICATION (Waste Certification)

I hereby certify the above items have been examined and the above items are correct to the best of my knowledge.

Signed: _____
(Waste Certification)

Date: _____

OAC-880930-1, Rev. 2 (08/15/89)

Attachment I
Page 1 of 1

RADIOACTIVE-LSA, RADIOACTIVE-LIMITED QUANTITY, & "RQ" LABELS

Radioactive-LSA

RADIOACTIVE-LIMITED QUANTITY

UN-2910

FROM: FMPC

This package conforms to the conditions and limitations specified in 49 CFR 173.421 for excepted radioactive material, limited quantity, n.o.s., UN-2910.

FMPC-REST-1823-1 (REV. 10/23/89)

RQ

3511

Attachment J
Page 1 of 1

VEHICLE RADIATION MONITORING REPORT

FMPC
ENVIRONMENT SAFETY & HEALTH · ENVIRONMENTAL & RADIOLOGICAL MONITORING

VEHICLE RADIATION MONITORING REPORT

Date Monitored: _____ Monitored by: _____ (SIGNATURE)

Carrier Name: _____

Vehicle Type: Tractor-trailer ☐ Other motor vehicle ☐ Railcar ☐ Open flatbed ☐ Covered ☐

Other ☐ (explain) _____

License no., if motor vehicle: _____ State: _____

Trailer or railcar identification: _____

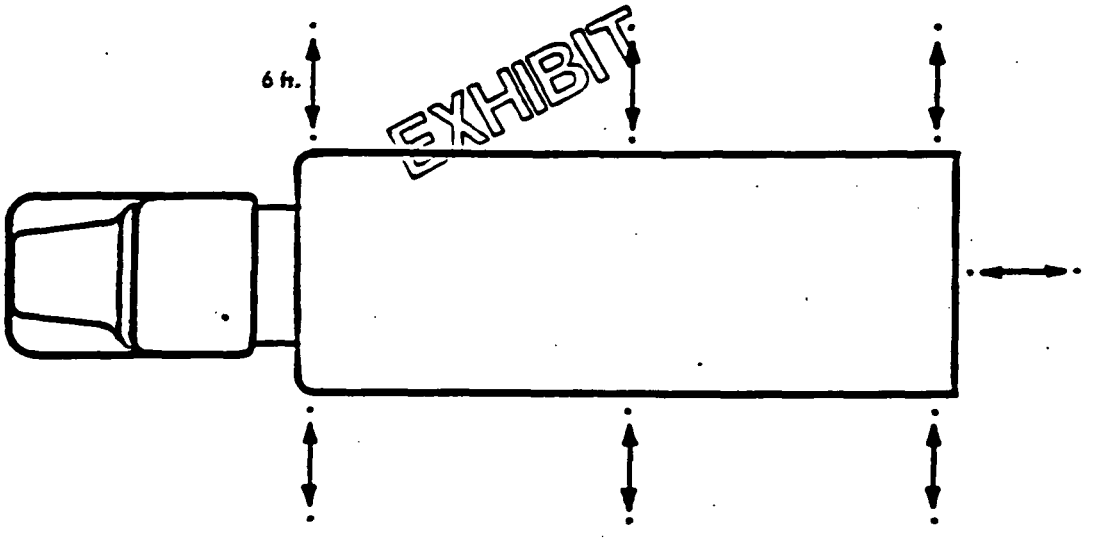
Is this an exclusive use vehicle? Yes ☐ No ☐

Vehicle Status: (a) Outgoing ☐ (b) Incoming ☐ (c) Outgoing empty, not "exclusive use" ☐ (d) Empty, before loading ☐

(e) Outgoing empty, "exclusive use" ☐ (f) If (e) is checked, is vehicle to remain "exclusive use"? Yes ☐ No ☐

Is visible contamination present? Yes ☐ No ☐ If "yes", show on diagram.

Dose rate shown by asterisks in mrem/hr. Surface alpha contamination, circled, in d/m/100cm².



(1) Same locations apply to van-type trucks. For railcars, disregard cab section but show dose rates found at each end.
(2) Measurements at 6-ft. not required if all readings at vehicle surface are not greater than 10 mrem/hr.

Survey Instruments Used

Alpha — Type or Model No _____ Serial No. _____

Beta-gamma — Type or Model No _____ Serial No. _____

Additional information attached? (E&RM copy only): Yes ☐ No ☐

NO.	DISTRIBUTION OF COPIES
1	Environmental & Radiological Monitoring (RECORD COPY)
2	Transportation Supervisor

FMPC ESSH 1996-1 REV 8/28/86

Attachment K
Page 1 of 1

WASTE CERTIFICATION PRELIMINARY CHECKLIST

WASTE CERTIFICATION PRELIMINARY TRAILER CHECKLIST

TRAILER NUMBER: _____

1. Verify the RST has surveyed trailer prior to loading and recorded results on form ES&H-1596-1 to assure the trailer is not contaminated. _____

2. Verify the condition of trailer floor, interior, roof, sides, exterior, rear doors and tires are acceptable. Any discrepancies must be reported immediately to the Transportation Supervisor. _____

Comments: _____

_____

3. Verify the trailer has been lined properly according to SOP-TRF-46-C-110 prior to loading. _____

4. Visually verify that the packages have been properly tied-down according to SOP-TRF-46-C-110. _____

   Shipment Number: _____

5. Visually verify that the loaded trailer rear doors are secured with a tamper indicating seal. _____

   Seal Number: _____

I hereby certify that the above checklist item have been verified and that all the above items are correct to the best of my knowledge.

Signed : _____
(Certification Personnel)

Date : _____

Signed : _____
(Transportation Supervisor)

Date : _____

2AC-880801-1, Rev.1 (12/06/89)

Attachment L
Page 1 of 1

WASTE CERTIFICATION PRELIMINARY CHECKLIST (SEA/LANDS)

WASTE CERTIFICATION PRELIMINARY TRAILER CHECKLIST (SEALANDS)

Rev. 10/10/89

Trailer Number:_____ Shipment Number:_____

1. Verify the ERMT has surveyed trailer prior to loading and recorded results on form ES&H-1596-1 to assure the trailer is not contaminated . _____

2. Verify the trailer floor, exterior and tires are acceptable for loading . Any discrepancies must be reported immediately to the transportation supervisor . Any nonconfomances or outstanding DCAR must be resolved before shipment can be released . _____

Comments: _____

_____

3. Visually verify that the sealand containers have been properly tied down with, four straps on each container, chain and 2X4 on front and back of load . _____

4. Visually verify the sealand containers rear doors are secured with a tamper proof DOT approved seal . _____

Container #1:_____Seal number:_____Box #:_____
Container #2:_____Seal number:_____Box #:_____

I hereby certify that the above checklist has been completed and witness that all above information is correct to the best of my knowledge .

Signed :_____
(Certification Personnel)

Date :_____

Signed :_____
(Transportation Supervisor)

Date :_____

Attachment M
Page 1 of 1

BILL OF LADING

STRAIGHT BILL OF LADING — SHORT FORM — ORIGINAL — NOT NEGOTIABLE

CARRIER	DATE	CARRIER'S I.D.	SHIPPER'S NO.

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this carrier of the property described in the Original Bill of Lading.

AT FERNALD, OHIO **FROM USDOE, c/o Westinghouse Materials Company of Ohio ACTING UNDER DOE CONTRACT DE-AC05-86OR21600**

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official, Southern, Western and Illinois Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back hereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

(Mail or express address of consignee — For purpose of notification only.)

Consigned to: _____

Destination: _____ State of: _____ County of: _____

Route: _____

Delivering Carrier: _____ Vehicle No.: Trn. #

Car Initial: _____ Car No.: _____ Seal No.: FA/WMCO

NUMBER PACKAGES	HM	DESCRIPTION OF ARTICLES, SPECIAL MARKS, AND EXCEPTIONS	* WEIGHT (Subject to Correction)	CLASS OR RATE	CHECK COLUMN
		IN THE EVENT OF AN ACCIDENT OR EMERGENCY, NOTIFY THE DOE EMERGENCY OPERATIONS CENTER, OAK RIDGE, TN — 615-576-1005, COLLECT, DAY OR NIGHT.			

Subject to Section 7 of Conditions of applicable bill of lading, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement.
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

WMCO
(Signature of consignor)

If charges are to be prepaid, write or stamp here, "To be Prepaid."

Received $ _____ to apply in prepayment of the charges on the property described hereon.

Agent or Cashier

Per _____
(The signature here acknowledges only the amount prepaid.) _____

Charges Advanced:

$ _____

* If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall contain the agreed or declared value of the property.
NOTE - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.
The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding.

_____ Per _____

+ THIS SHIPMENT IS CORRECTLY DESCRIBED. CORRECT WEIGHT IS _____ LBS

SUBJECT TO VERIFICATION BY THE E. W. & I. BUREAU NATIONAL WT. AGREEMENT

* Shipper's signature in lieu of stamp, not a part of bill of lading approved by the Interstate Commerce Commission.

741 NO.: _____

SS - SO NO.: _____

MSO NO.: _____

EQUAL EMPLOYMENT OPPORTUNITY — The nondiscrimination clauses contained in section 202 of Executive Order 11246 relative to equal employment opportunity for all persons without regard to race, creed, color, or national origin, and the implementing rules and regulations of the President's Committee on Equal Employment Opportunity which, to the extent not inconsistent with Executive Order 11246, remain in full force and effect as those of the Secretary of Labor, are incorporated herein.

THIS SHIPMENT is subject to the terms and conditions set forth in the standard form of the U. S. Government bill of lading and to any available special rates or charges.

* This shipment is the property of and the freight charges are assumed by the U. S. Government. Subject to the provisions of Section 16721 Quotation No. (Tender No. _____ Effective _____).
* IT IS UNDERSTOOD AND AGREED THAT THIS SHIPMENT IS MADE BY THE CONSIGNOR FOR AND ON BEHALF OF THE U. S. GOVERNMENT; THAT THE CONSIGNOR IS AUTHORIZED TO AND WILL MAKE ANY PAYMENT DUE HEREUNDER AS CONSIGNOR OR SHIPPER FROM GOVERNMENT FUNDS ADVANCED AND AGREED TO BE ADVANCED TO IT BY THE U. S. DEPARTMENT OF ENERGY AND NOT FROM ITS OWN ASSETS; AND THAT NOTHING HEREIN SHALL PRECLUDE LIABILITY OF THE GOVERNMENT FOR ANY PAYMENT PROPERLY DUE HEREUNDER IF FOR ANY REASON SUCH PAYMENT IS NOT MADE BY THE CONSIGNOR FROM SUCH GOVERNMENT FUNDS.
* THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION.

USDOE, c/o Westinghouse Materials Company of Ohio, shipper

Per _____

Permanent post office address of shipper.

P. O. BOX 398704 CINCINNATI, OHIO 45239
AREA CODE 513 738-6200

_____ Agent

Per _____

MPC-ADMS-462 (REV. 9/19/88)

3511

Attachment N
Page 1 of 1

WASTE CERTIFICATION FINAL TRAILER/VEHICLE CHECKLIST

WASTE CERTIFICATION FINAL TRAILER/VEHICLE CHECKLIST

(Rev.12/06/89)

Carrier:_____ Trailer No. :_____ Shipment No. :_____

Initials

1. Verify the RST has surveyed the trailer/vehicle and recorded results on Vehicle Radiation Monitoring Report (Form FMPC-ES&H-1596-1). _____

2. Verify the proper placards are in place, as required. _____

3. Verify the driver has performed a safety inspection of vehicle prior to leaving the FMPC: _____

   headlights _____ horn _____
   turn signals _____ tires _____
   brake lights _____ braking check test (optional) _____

4. Verify the envelope with Manifest and Tally Sheets is in trailer. _____

5. Verify that a seal has been placed on the trailer doors and that the trailer number and seal number match the trailer and seal number recorded on the Bill of Lading. Report all discrepancies to the Traffic Manager. _____

   Seal Number: _____

6. Verify all lot markings and weights on the Tally Sheet match the lot markings and weights on the Shipping Order. _____

Date Shipped: _____ Time Shipped: _____

I hereby certify that the above items have been verified and are correct to the best of my knowledge.

Signed:_____ Date:_____
(Waste Certification Personnel)

NOTE: UPON SATISFACTORY COMPLIANCE WITH THE ABOVE CHECKLIST CERTIFICATION PERSONNEL SHOULD SIGN THE SHIPPING ORDER AT THE SPACE MARKED "QUALITY CONTROL APPROVAL".

CAC-681115-1, Rev. 2

Attachment 0
Page 1 of 1

SHIPPING ORDER FOR NUCLEAR MATERIAL

NOTE: Spaces marked "A" are for use of classification stamps when required

Westinghouse Materials Company of Ohio

SHIPPING ORDER FOR NUCLEAR MATERIAL

A

Date Prepared: _____

SHIP TO:	ROUTING:			SHIPPERS AUTHORIZATION NO.:	SHIPPING ORDER NO.:
STREET:	PREPAID:	CAR OR TRAILER NO.:	SEAL NO.:	SHIPPED FROM PLANT:	ORIGINATOR NO.:
CITY: STATE:	COLLECT:	BILL OF LADING NO.:	QUALITY CONTROL APPROVAL:		DATE SHIPPED:
SPECIAL INSTRUCTIONS:		COUNTRY CONTROL NO.:	PROJECT NO.:		TIME SHIPPED:

Type of Material _____ FMPC Production Order No _____ Originator's Signature _____

Station RIS _____ DOE 741 No _____ Shipment Authorized By _____ (NUCLEAR MATERIALS REPRESENTATIVE)

NMC DATA		ORIGINATOR'S DATA						MATERIAL CONTROL DATA						
FROM COST MOA CODE	741 NO	PO NO	LOT NUMBER	QUANTITY	WEIGHT (LBS) GROSS	TARE	NET	ANAL CODE	ELE ANAL	ELE LBS	ELE GRAMS OR KGS	LIMIT ERROR ELE	ISO ANAL	U235 GRAMS OR KGS	LIMIT ERROR

DISTRIBUTION OF COPIES			
[illegible] (RECORD COPY)		5	Cost Accounting
[illegible]pping Group		6	Originator of Shipping Order
[illegible]ity Control			
[illegible]uction Control			

[illegible] 558 (REV 8-8-85)

I, _____ certify that this shipment was made on the above date after complying with all security regulations

A

Audited by _____ Date _____

A

3511

Attachment P
Page 1 of 1

WASTE CERTIFICATION TRAFFIC SHIPMENT DOCUMENTATION CHECKLIST

Waste Certification Traffic Shipment Document Checklist

	Bill/Lading(B/L)	Shipping Order(S.O.)
Ship #	_____	_____
B/L#	_____	_____
S.O.#	_____	_____
Trailer#	_____	_____
Date Prep	_____	_____
Mat.Type	_____	_____
Gross Wt.	_____	_____
Tare Wt.	_____	_____
Net Wt.	_____	_____
E.T.A.	_____	_____
Seal #	_____	_____
MCA sign	_____	_____
# of cont.	_____	_____
LSA/LQ/RQ	_____	_____

	Low Level Checklist	Packaging Information	
Ship #	_____	Hazard Class	_____
B/L #	_____	Material Form	_____
S.O.#	_____	Chemical Form	_____
All Checks	_____	Labels Required	_____
3 sign	_____	Packaging Type	_____

Radiation Monitoring Sheets

	Empty	Outgoing	Survey	Cab
Trailer#	_____	_____	_____	_____
Date/Time	_____	_____	_____	_____
Survey com.	_____	_____	_____	_____

*Complete liscense # _____
*Temporary Seal # _____

Container Radiological Sheets

	Date	Time	Data Complete	Ship #
Initials	_____	_____	_____	_____
Resmears	_____	_____	_____	_____

	Off Site Tie Down	Contaminated Articles Sheet	
Ship #	_____	Curies	_____
Trailer #	_____	Signature	_____
Seal #	_____	Data Complete	_____
Sup.Sign	_____		

*3 Tally Sheets & 1 Storage/Disposal Sheet present _____
*Driver Inst. Pack complete and numbered _____
*Weight Ticket *Ft. Axle_____ * Rear Axle_____ * GR. Wt._____
(Maxium weight on front or rear axle 34,000 lbs.)

QAC-880731-1, Rev.1 (10/10/89)

LLGG

Attachment Q
Page 1 of 1

LLW SHIPMENT CHECKLIST

FMPC
SECURITY, ACQUISITION & MATERIALS LOGISTICS - TRANSPORTATION SECTION
LLW SHIPMENT CHECKLIST & NTS NOTIFICATION

DATE:	SHIPMENT NO.:	B/L NO.:	SS SO NO.:	CARRIER:	TRAILER NO.:

	LSA	DEPARTURE TIME: / ETA:	NOTIFICATION TO N ☐ (FTS: 575-63
	RQ	FROM:	
	LTD. QTY.	TO:	
	DRUMS	DATE:	
	WASTE CERTIFICATION CONTAINER TOTALS, WEIGHTS & CURIES OF LSA/LTD QTY - RQ SHEETS	BY WHOM:	
	BOXES	TO WHOM	
	SMEAR SHEETS	☐ FACSIMILE SENT	☐ DRIVER GIVEN DOSIMETER BAC
	WASTE MANAGEMENT STORAGE & DISPOSAL SHEETS DELIVERED — PER NTS	MONITORING REPORTS:	
	TALLY SHEETS		
	CARRIER/DRIVER INSTRUCTION PACK (2)		
	NEVADA PERMIT		
	INCOMING/EMPTY BEFORE LOADING		
	OUTGOING/LOADED		
	TRACTOR CAB		
	OFFSITE LOADING-TIE DOWN-VEHICLE INSPECTION REPORT		
	WEIGHT TICKET		
	CHECKED TALLY SHEET (BY CHECKER)		

DRIVER RECEIVES:
COPY OF B/L, TALLY SHEET, INSTRUCTION PACK, NEVADA PERMIT, & ENVELOPE FOR CONSIGNEE WITH TALLY SHEET & MEMO B/L

SPECIALIST A/TRAFFIC:	TRANSPORTATION SUPERVISOR: (REVIEW)	TRAFFIC MANAGER: (REVIEW)

	CONDITION OF CONTAINERS	LOADERS:
	CONTAINER PROPERLY LABELED	
	RADIOACTIVE PLACARDS (FOR LSA ONLY)	
	ENVELOPE WITH STORAGE & DISPOSAL SHEETS AND TALLY SHEETS IN TRAILER	
	TRAILER LINED WITH PLASTIC & CARDBOARD ON FLOOR— SCRAP WOODEN PALLETS AND/OR BOXES ENCLOSED WITH PLASTIC AS ONE PACKAGE	
1	sportation Supervisor: _____	

Attachment S
Page 1 of 1

3511

OFF-SITE LOADING TIE-DOWN INSPECTION - VEHICLE INSPECTION FORM

WMPC
SECURITY, ACQUISITION & MATERIALS LOGISTICS DEPARTMENT - TRANSPORTATION SECTION

OFFSITE LOADING — TIE DOWN INSPECTION — VEHICLE INSPECTION

Date: _____

COMMODITY:	CARRIER:	TRAILER NO.:	SEAL NO.:
			FA-WMCO

BALE/BOX/DRUM/SEA LAND CONTAINER NUMBERS:

LSA _____
LSA-RO _____
LQ _____
LQ-RO _____
TOTAL _____

DISCREPANCIES DETECTED	CORRECTED YES	CORRECTED NO	SHIPMENT REJECTED YES	SHIPMENT REJECTED NO

Checked By _____
SIGNATURE - CHECKER

TIE-DOWN INSPECTION AND CHECK-OFF SHEET

INSPECTION ITEM	YES	NO
Wood shoring installed to prevent longitudinal or lateral movement		
Steel strapping around the cargo securing as a stable shipment		
When weight dictates, containers divided into two units, one front and one rear of trailer not exceeding approximately 20,000 pounds each		
1¼" steel strapping utilized (5450 lbs. minimum tensile strength)		
____ each anchor plates or "U" bolts fastened to undertrame (____ each side of unit) placed and secured for ____ transverse bands over unit		
Four each brakeman plates or "U" bolts fastened to undertrame (two for each band) placed under each unit and secured for two longitudinal bands, securing the boxes/skids into one tight unit, anchored to the floor of the trailer		
Two Signode seals No. 107 crimped whenever two bands are used on an end over end lap joint		
Anchor and brakeman plates secured with eight each 2" nails		
Sea Land Containers ..... 4 each nylon straps		
..... Chains		
..... 2 X 4s		

VEHICLE INSPECTION REPORT

CONDITION	PASS	FAIL	CONDITION	PASS	FAIL	CONDITION	YES	NO
Condition of Floor			Condition of Sides			Detected Sabotage Devices		
Condition of Interior			Condition of Exterior					
Condition of Roof			Condition of Rear Doors			Detected Evidence of Sabotage		

Overall appearance: _____

General Comments: _____

Accepted: _____ Rejected: _____

Checked By: _____
SIGNATURE - TRANSPORTATION SUPERVISOR

NO.	DISTRIBUTION OF COPIES
1	Transportation Section (RECORD COPY)

WMPC-SAML-2489 (REV. 4/3/89)

Attachment T
Page 1 of 2

WASTE SHIPMENT VERIFICATION CHECKLIST

WASTE SHIPMENT VERIFICATION

Page 1 of 2

Date_____ Time _____

Shipment No. WML-_____ Trailer No._____ No./Type Container_____

1. Storage & Disposal Data Sheet

   A. Material Descsription_____
   B. Signed _____ Shipment No. WML-_____
   C. Total Curries _____
   D. Total Weight(Gross)_____
   E. Total Volume _____
   F. Type Container _____
   G. Date _____ Time _____
   H. Check of "G" for all copies _____

2. Tally Sheet

   Shipment No. WML-_____ Date _____ Time _____
   Check of Date & Time of all copies in Pkg. _____

A. Lot Number	Gross Weight	Net Weight
Totals		

   B. Total containers _____ Totals agree with "1" above _____
   C. Field check of Tally Sheet included _____

3. Shipping Order for Nuclear Material (FMPC-ES&H-558-3 REV. 1/29/87)

   A. Shipping Order No. _____ B/L No. _____
   B. 741 No. FVC-VAB _____ Seal No. FA-WMCO_____
   C. Trailer No. _____ MC & A Signed _____
   D. Material Type _____
   E. Lot Nos. agrees with Tally Sheet _____ Total Quantity _____
   F. Gross Weight _____* Element Analysis _____*
   G. Tare Weight _____* Element Ibs. _____*
   H. Net Weight _____* Element Grams or Kgs _____*
   I. Iso Analysis _____* U235 Grams or Kgs _____*
   J. Est. Time of Arrival _____
   K. *Totals (listed) & Individual Lot values (not listed) agree with Tally Sheet. _____

4. Bill of Lading

   B/L No. _____ Trailer No. _____ Seal No.FA/WMCO_____
   741 No.FVC-VAB- _____ SS-SO No. _____
   ETA : _____
   Number of containers:

			Type Container	Gross Wt.	Net Wt.
LSA _____	RQ	_____			
	NON-RQ	_____			
LQ _____	RQ	_____			
	NON-RQ	_____			
Totals		_____			

   _____ Above information agrees with Shipping Order & Tally Sheet.
   _____ Remainder of information of Bill of Lading checked.

3511

Attachment T
Page 2 of 2

WASTE SHIPMENT VERIFICATION CHECKLIST
(continued)

WASTE SHIPMENT VERIFICATION Page 2 of 2

5. Low Level Waste Shipment Checklist and NTS Notification Form

   A. Shipment No. WML-_____ B/L No. _____
   SS-SO No. _____
   B. Data on line 5A agrees with B/L and Shipping Order _____
   Completed except for Departure Time and Traffic Manager review _____

6. Radiation Monitoring Sheet (FMPC ES&H-1596-1) For:
   A. Trailer Empty _____ Trailer ID _____
   B. Trailer Loaded _____ Trailer ID _____
   C. Cab Only _____ Trailer ID _____ License No._____
   D. Loaded Vehicle Radiological Survey _____ Trailer ID _____
   E. Temporary Seal Numbers _____

7. Container Radiological Data
   Initial Dose Rate Data _____ 48 Hour Smears: Date_____Time_____
   Equal to or less than 48 hours prior to Load Time _____

8. Weight Ticket
   Load Weight _____ Rear Axle Wt._____ Drive Wt._____

9. Off-Site Tie-Down Inspection Form (FMPC SAML 2495 REV 4/5/89)
   Shipment No. WML-_____Trailer No._____ Seal No. FA/WMCO_____
   A. Checked and signed in two places _____

10. LSA/RQ, LQ documentation
    One copy in Traffic File package _____
    One copy in envelope for Driver _____
    A. Signed if non-computer report _____
    B. Wt. checks with Tally Sheet _____
    C. Curies checks with Disposal Sheet or Tally Sheet _____

11. Driver Instructions Complete (2 sets) _____
    Tally sheet also in envelope _____
    All Written identity & information checks _____

12. Waste Certification Checklist present, signed and in agreement with other documentation.
    A._____ Waste Certification Preliminary Trailer Checklist

    B._____ Waste Certification Traffic Shipment Documentation Checklist

    C._____ Waste Certification Final Trailer/Vehicle Checklist

Shipping Order signed by Certification Official _____

Shipment released on _____ at _____AM/PM

Signed _____

List Nonconformances found:

_____

_____

QAC-890601-1, Rev 0

STEP 7.

6367

FEED MATERIALS PRODUCTION CENTER

APPLICATION TO SHIP WASTE TO THE NEVADA TEST SITE

MAY 1989

Revision 3 May 1991

Prepared by
WESTINGHOUSE MATERIALS COMPANY OF OHIO
P. O. BOX 398704
CINCINNATI, OHIO 45239-8704

Prepared for
U.S. DEPARTMENT OF ENERGY
OAK RIDGE OPERATIONS OFFICE
Contract DE-AC05-86OR21600

SIGNATURES BELOW ATTEST THAT THE INFORMATION CONTAINED IN THIS APPLICATION IS CORRECT AND THAT THE WASTE STREAMS TO BE SHIPPED WILL MEET THE NTS WASTE ACCEPTANCE CRITERIA:

T. J. Walsh
Manager, OU3 Compliance

J E Clementz
Prime Certification Officer

C W Bower for D I Dunmury
Manager, Materials
Control & Accountability

James P McGowan
Manager, Traffic

Timothy M Fry for R L Gardner
Manager, Facilities and
Warehousing

A L Hunsaker
Manager, Waste Management

RECORD OF REVISIONS

Revision No.	Date
0	5/89
1	8/90
2	11/90
3	5/91

LIST OF EFFECTIVE PAGES

Pages	Revision No.
1-39	0
1-33	1
1,2,5, and signature page	2
signature page	3
1	3
2	3
4	3
5	3
8-11	3
14-17	3
21-32	3

3511

APPLICATION TO SHIP WASTE

I. Generator Information

A. Generator/Facility Name and Location
B. EPA Identification Number
C. DOE Field/Area Office and Contacts
D. Contractor Name and Contacts

II. Waste Certification Program

A. Waste Certification Program Plan
B. Certification-Related Procedures

III. Waste Stream Information

A. Waste Stream Identification
   1. Waste Stream Number
   2. Waste Type
   3. Description of Waste
B. Justification for Shipment to NTS
C. Funding Method
D. Three-Year Waste Shipment Forecast
E. Packaging and Shipping Information
F. Security/Classification Information
G. Waste Characterization Program
   1. Waste Analysis Plan
   2. Procedures
   3. Waste Stream Characterization Data Sheet
   4. Waste Analysis Results
H. Waste Acceptance Criteria Certification Summary
   1. General Regulatory Criteria for Packages
   2. NTS Specific Package Criteria
   3. General Waste Form Criteria
   4. Additional Mixed Waste Form Criteria

IV. Exemption Requests

A. Area of Noncompliance and Reason for Request
B. Requested Duration
C. Plan for Corrective Action

110

I. GENERATOR INFORMATION

A. GENERATOR/FACILITY NAME AND LOCATION:

Shipping Address:

Feed Materials Production Center (FMPC)
7400 Willey Road
Fernald, Ohio 45030

Mailing Address:

Feed Materials Production Center
P. O. Box 398704
Cincinnati, Ohio 45239-8704

B. EPA IDENTIFICATION NUMBER:

OH6890008976

C. DOE FIELD/AREA OFFICE CONTACTS:

Primary:

Gerald W. Westerbeck
Fernald Site Manager
U.S. Department of Energy
P. O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6357
FTS 774-6357
Facsimile Number (513) 738-6650

Alternates:

Raymond J. Hansen
Assistant Site Manager
U.S. Department of Energy
P. O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6655
FTS 774-6655

David M. Rast
U.S. Department of Energy
P. O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6322
FTS 774-6322

D. CONTRACTOR NAME AND CONTACTS:

Westinghouse Materials Company of Ohio (WMCO)
P. O. Box 398704
Cincinnati, Ohio 45239-8704

Primary contacts:

Joseph T. Grumski (Manager, Waste Management)
Westinghouse Materials Company of Ohio
P.O. Box 398704
Cincinnati, Ohio 45239-8704
(513) 738-6280 FTS 774-6280
Facsimile Number (513) 738-6311

James E. Clements (Manager, Quality Certification)
Westinghouse Materials Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239-8704
(513) 738-8648 FTS 774-8648
Facsimile Number (513) 738-8651

James P. McGrogan (Manager, Traffic)
Westinghouse Materials Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239-8704
(513) 738-6462 FTS 774-6462

Alternate contacts:

Brenda S. Perkins (Area Supervisor, Facilities & Warehousing)
Westinghouse Materials Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239-8704
(513) 738-6001 FTS 774-6001
Facsimile Number (513) 738-6245

Steve D. Brown (Assistant Project Engineer, Waste Management)
Westinghouse Materials Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239-8704
(513) 738-8654 FTS 774-8654
Facsimile Number (513) 738-8944

Robert L. Gardner (Manager, Facilities & Warehousing)
Westinghouse Materials Company of Ohio
P. O. Box 398704
Cincinnati, Ohio 45239-8704
(513) 738-6244 FTS 774-6244
Facsimile Number (513) 738-6245

II. WASTE CERTIFICATION PROGRAM

A. WASTE CERTIFICATION PROGRAM PLAN (See Appendix I)

I. WASTE CERTIFICATION PROGRAM

B. CERTIFICATION RELATED PROCEDURES (See Appendix I)

III. WASTE STREAM INFORMATION

A. WASTE STREAM IDENTIFICATION

1. WASTE STREAM NUMBER:

The FMPC has categorized five (5) low level radioactive waste streams for the purpose of characterization as required by NVO-325. The waste streams include the following:

Low Level Wastes:

ONLO-000000001	Contaminated Process Area Wastes
ONLO-000000002	Contaminated Construction Wastes
ONLO-000000003	Low Grade Residues
ONLO-000000004	High Grade Residues
ONLO-000000005	Thorium Wastes

2. WASTE TYPE:

Low Level Waste

3. DESCRIPTION OF WASTE

(Including generation process, treatment, final form, and special handling or disposal requirements.)

III. WASTE STREAM INFORMATION

3.1 Waste Stream ONLO-000000001, Process Area Wastes

Numerous contaminated process area wastes are generated at the FMPC in conjunction with normal production related activities. These wastes have all been prepared and shipped to the Nevada Test Site in the past and include the following:

- Trash (plastic, cardboard, paper, etc.)
- Incinerator ash
- Scrap salts (high fluoride)
- Asphalt
- Floor sweepings - including the compound for floor cleaning
- Scrap drums
- Refuse metal
- Scrap filters
- Pallets, scrap wood
- Ceramics, glass
- Dust collector bags
- Furnace cleanings (Rockwell)

A toxicity characteristic leaching procedure (TCLP) laboratory test shall be performed on all asphalt plus others where applicable to determine measurement of benzene present in material. These results shall be submitted to NTS as required for material disposal.

These wastes may be packaged into drums, metal boxes, and sea/land containers.

3.2 Waste Stream ONLO-000000002, Construction Wastes

Contaminated construction wastes are generated at the FMPC in the demolition or excavation phase of a construction or maintenance project. Construction wastes which are currently shipped to NTS may include the following:

- Soil
- Rocks, gravel
- Concrete
- Metal
- Wood
- Trash (plastic, cardboard, paper, etc.)
- Asphalt
- Glass

Construction wastes may be packaged into drums, metal boxes, and sea/land containers.

III. WASTE STREAM INFORMATION

3.3 Waste Stream ONLO-000000003, Low Grade Residues

Low grade residues were generated and are stored at the FMPC as a result of the production processes within the various plants or other DOE facilities.

Low grade residues generally contain between 1% to 20% U-238 by weight and 0.2% to 2.0% U-235 relative to U-238.

One of the major uranium residues include magnesium fluoride (MgF_2). MgF_2 was produced during the reduction process of uranium tetrafluoride with magnesium in electrical resistance furnaces to uranium derby metal. The MgF_2 waste was then repackaged in 48-gallon drums using 55-gallon drums as overpacks.

Slurries and residues from Plant 8 are processed through various equipment due to their wet/dry consistencies. Some of the dry uranium waste materials are miscellaneous residues including scrap uranium tetrafluoride (UF_4) and black oxide (U_3O_8) which are packaged using the Rotex without a screen. Raffinate cake, sump cake, and slag leach filter cake are dried in the Rotary Kiln or Primary Calciner and packaged from there. All of these are processed in Plant 8 and packaged into 48-gallon drums with 55-gallon drum overpacks.

Low Grade Uranium Residues:

- Discard process residues
- Trailer cakes
- Waste slurries (dried)
- Raffinate
- Sump cake
- Dust collector residues
- Filter cakes
- MgF_2

III. WASTE STREAM INFORMATION

3.4 Waste Stream ONLO-000000004, High Grade Residues

High grade residues are also generated or stored at the FMPC as a result of the production processes within the various plants or other DOE facilities. High grade residues generally contain between 20% to 100% U-238 by weight and 0.2% to 2.0% U-235 relative to U-238.

Many of the high grade residues are intermediate products in the uranium metal production process which do not meet the quality or economic discard limit criteria and, therefore, are classified as low level waste.

High Grade Uranium Residues:

- UF_4 (off-spec)
- Scrap U_3O_8
- Reject UO_3

3.5 Waste Stream ONLO-000000005, Thorium Wastes

Since 1972, the FMPC has served as the U.S. DOE storage repository for thorium. Approximately two-thirds of the thorium inventory was processed at the FMPC with the remaining portion originating at other DOE facilities. The thorium at the FMPC is in the form of thorium metal, oxides, and residues.

The principal thorium residues consist of thorium oxides produced from unpurified thorium nitrate via the thoria gel process, thorium oxide powder used as refinery feed, and dry thorium hydroxide. Thorium oxides produced from FMPC processing of Hanford thorium nitrate contain trace quantities (about 20 ppm) of the isotope U-233 as a contaminant. This amounts to about 10% of the thorium residues. The metal consists primarily of clad thorium metals and partially oxidized metals.

All thorium materials will be overpacked into individual drum overpack containers, drums overpacked in metal boxes or into multiple container overpacks such as strong tight containers, to meet NTS waste acceptance criteria.

Thorium Wastes:

- ThF_4
- Scrap thorium metal
- Thorium oxides
- Thorium ores and residues
- Oxalates and hydroxides

III. WASTE STREAM INFORMATION

B. JUSTIFICATION FOR SHIPMENT TO NTS

The FMPC proposes to ship waste streams consistent with those listed in Section III, Part A-3.1 through III, Part A-3.3 of this application. The waste streams will be processed if necessary, packaged, transported and buried at the Nevada Test Site for disposal.

Since 1986, the FMPC has not been permitted by the U.S. EPA to dispose of any low level waste on-site. As a result, a backlog of low level waste streams, equaling approximately 814,000 $ft.^3$, was inventoried by the end of 1986 as requiring permanent disposal. This backlog waste is currently stored outdoors in deteriorating drums or on 30 plus year old concrete pads with marginal capability to control contaminated runoff. In addition to the backlog waste, the FMPC continues to generate low level waste from ongoing production activities and construction projects. Current production activities generate approximately 260,000 $ft.^3$ of low level waste per year. The construction projects expect to generate approximately 950,000 $ft.^3$ of low level waste between 1987 and 1992.

Based upon the relatively small size of the Feed Materials Production Center (1,050 acres), its close proximity to densely populated areas, and its location over a major sole source aquifer, off-site disposal of the low level waste at NTS is essential to continued FMPC operations.

III. WASTE STREAM INFORMATION

C. FUNDING METHOD

Funding shall be set up to prepay FMPC estimated waste volumes by at least a fiscal quarter in advance. Purchase orders shall be prepared and addressed to REECo, based upon a minimum of two quarters estimated waste volume and consistent with the forecasts identified above and the prevalent disposal charge per cubic foot. Separate purchase orders shall be provided for each waste type. Upon receipt of bill from REECo, payment shall be expedited. WMCO shall adjust any quarterly forecast prior to the initiation of billing by REECo for that quarter.

III. WASTE STREAM INFORMATION

D. THREE YEAR WASTE SHIPMENT FORECAST

The three tables in this section contain FMPC waste forecasts for Fiscal Years 1991 through 1993. Waste streams numbered 001 through 004 are currently approved and being shipped to the Nevada Test Site (NTS) for disposal.

THREE-YEAR WASTE SHIPMENT FORECAST

GENERATOR: Feed Materials Production Company PREPARED BY: J. T. Grumski DATE: 04/01/91

FORECAST PERIOD	WASTE STREAM NUMBER	WASTE TYPE	CONTAINER			NUMBER OF SHIPMENTS	TOTAL VOLUME CUBIC FEET
			TYPE	SIZE	NUMBER		
FY-1991	001	Process	Sea/Land	8'x8'x20'	25	25	33,725
04/01-06/30	002	Construction	Sea/Land	8'x8'x20'	15	15	20,235
	002	Construction	Metal Box	4'x4'x7'	20	2	2,040
07/01-09/30	001	Process	Sea/Land	8'x8'x20'	25	25	33,725
	002	Construction	Sea/Land	8'x8'x20'	35	35	47,215
	002	Construction	Metal Box	4'x4'x7'	80	8	8,160
	005*	Thorium	Drums	48/55-gal.	1,760	22	14,080
					TOTALS	132	159,180

*To be shipped upon approval by NTS

THREE-YEAR WASTE SHIPMENT FORECAST

GENERATOR: Feed Materials Production Company PREPARED BY: J. T. Grumski DATE: 04/01/91

FORECAST PERIOD	WASTE STREAM NUMBER	WASTE TYPE	CONTAINER			NUMBER OF SHIPMENTS	TOTAL VOLUME CUBIC FEET
			TYPE	SIZE	NUMBER		
FY-1992	001	Process	Sea/Land	8'x8'x20'	36	36	48,564
	001	Process	Metal Box	4'x4'x7'	972	108	99,144
	002	Construction	Sea/Land	8'x8'x20'	99	99	133,551
	002	Construction	Metal Box	4'x4'x7'	576	64	58,752
	003	Low Grade Residues	Drum	48/55-gal.	13,500	142	108,000
	004	High Grade Residues	Drum	55/83-gal.	900	15	10,865
	005*	Thorium	Metal Box	4'x4'x7'	783	87	79,866
					TOTALS	551	538,742

*To be shipped upon approval by NTS

THREE-YEAR WASTE SHIPMENT FORECAST

GENERATOR: Feed Materials Production Company PREPARED BY: J. T. Grumski DATE: 04/01/91

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'	61	61	82,289
	001	Process	Metal Box	4'x4'x7'	135	135	123,930
	002	Construction	Sea/Land	8'x8'x20'	99	99	133,551
	002	Construction	Metal Box	4'x4'x7'	576	64	58,752
	003	Low Grade Residues	Drum	48/55-gal.	13,500	142	108,000
	004	High Grade Residues	Drum	55/83-gal.	900	15	10,865
	005*	Thorium	Metal Box	4'x4'x7'	819	91	83,538
					TOTALS	607	600,925

*To be shipped upon approval by NTS

3511
654

III. WASTE STREAM INFORMATION

E. PACKAGING AND SHIPPING INFORMATION

1. Proper shipping name per 172.101, 49CFR

   Radioactive material: low specific activity (or) LSA, n.o.s.
   Hazard class: Radioactive material
   Identification number: UN-2912

   Radioactive material: limited quantity, n.o.s.
   Hazard class: Radioactive material
   Identification number: UN-2910

   Depending on the contents of the above descriptions may be shipped as a "Hazardous" or "Reportable Quantity (RQ)" material in compliance with 172.101, Appendix, 49 CFR.

2. Packaging

   All low level waste will be packaged in strong tight containers as defined in 49 CFR 173.24 and 173.425.

   Packages will be designated as "Industrial" for radioactive material and residues and "Bulk" for articles contaminated with radioactive material.

F. SECURITY/CLASSIFICATION INFORMATION

This section is not applicable to the FMPC since no classified waste is shipped for disposal at NTS.

III. WASTE STREAM INFORMATION

G. WASTE CHARACTERIZATION PROGRAM

1. Procedures (See Appendix I)

III. WASTE STREAM INFORMATION

G. WASTE CHARACTERIZATION PROGRAM

2. Waste Stream Characterization Data Sheet(s)

3511

Waste Stream Characterization Data Sheet

1. Waste Stream No.: O N L O - O O O O O O O O 1
   Process wastes less than 1% uranium by weight

2. Physical Characteristics:

   a. Density: 10-40 lb./cu.ft. (bulk density as packaged)

   b. Moisture Content: no free liquids (generally less than 1% water)

   c. Organic Material Content: none

3. Radioactive Characteristics:

   a. Is Waste > NRC Class C (see Title 10 CFR 61.55) ?: no

   b. SWIMS Nuclide Category (circle): 1 (2) 3 4 5 6 7 8

   c. Radioactive Constituents:

Nuclide	Specific Activity Range Low	Mean	High	Units
(1) U-238 (0.10% to 1.0% U)		0.3330E-06		Curies/gram U-238
(2) U-235 (0.2% to 3.99% U-235)		0.2140E-05		Curies/gram U-235
(3) U-234 (0.001% to 0.01% U-234 on a U basis)		0.3360E-06		Curies/gram Total U
(4)				

4. Hazardous Characteristics (for mixed waste):

   a. Basis for Identifying as Mixed Waste (circle): (1) Ignitable (2) Reactive (3) Corrosive (4) EP Toxicity or TCLP (5) Listed Waste

   b. Is this a Restricted Waste (see Title 40 CFR 268)?: _____

   c. Hazardous Constituents:

EPA Hazardous Waste No.	Chemical Name	Concentration Range Low	Mean	High	(Units)
(1)					
(2)					
(3)					
(4)					

(Attach additional sheets if necessary.)

Waste Stream Characterization Data Sheet

1. Waste Stream No.: 0 N L 0 - 0 0 0 0 0 0 0 0 2
   Construction wastes

2. Physical Characteristics:

   a. Density: 20-50 lb./cu.ft. (bulk density as packaged)

   b. Moisture Content: no free liquids (generally less than 25% water)

   c. Organic Material Content: none

3. Radioactive Characteristics:

   a. Is Waste > NRC Class C (see Title 10 CFR 61.55) ?: no

   b. SWIMS Nuclide Category (circle): 1 (2) 3 4 5 6 7 8

   c. Radioactive Constituents:

Nuclide	Specific Activity Range Low	Mean	High	Units
(1) U-238 (0.1% to 10% U)		0.3330E-06		Curies/gram U-238
(2) U-235 (0.2% to 1.0% U-235)		0.2140E-05		Curies/gram U-235
(3) U-234 (0.001% to 0.01% U-234 on a U basis)		0.3360E-06		Curies/gram Tot.
(4)				

4. Hazardous Characteristics (for mixed waste):

   a. Basis for Identifying as Mixed Waste (circle): (1) Ignitable

   (2) Reactive (3) Corrosive (4) EP Toxicity or TCLP (5) Listed Waste

   b. Is this a Restricted Waste (see Title 40 CFR 268)?: _____

   c. Hazardous Constituents:

EPA Hazardous Waste No.	Chemical Name	Concentration Range Low	Mean	High	(Units)
(1)					
(2)					
(3)					
(4)					

(Attach additional sheets if necessary.)

3511

Waste Stream Characterization Data Sheet

1. Waste Stream No.: O N L O - 0 0 0 0 0 0 0 0 3
   Low U residues 1-20% U by weight

2. Physical Characteristics:

   a. Density: 20-150 lb./cu.ft. (bulk density as packaged)

   b. Moisture Content: no free liquids (generally less than 1% water)

   c. Organic Material Content: none

3. Radioactive Characteristics:

   a. Is Waste > NRC Class C (see Title 10 CFR 61.55) ?: no

   b. SWIMS Nuclide Category (circle): 1 (2) 3 4 5 6 7 8

   c. Radioactive Constituents:

Nuclide	Specific Activity Range Low	Mean	High	Units
(1) U-238 (1% to 20% U)		0.3330E-06		Curies/gram U-238
(2) U-235 (0.2% to 2.0% U-235)		0.2140E-05		Curies/gram U-235
(3) U-234 (0.001% to 0.01% U-234 on a U basis)		0.3360E-06		Curies/gram Total U
(4)				

4. Hazardous Characteristics (for mixed waste):

   a. Basis for Identifying as Mixed Waste (circle): (1) Ignitable

      (2) Reactive (3) Corrosive (4) EP Toxicity or TCLP (5) Listed Waste

   b. Is this a Restricted Waste (see Title 40 CFR 268)?: _____

   c. Hazardous Constituents:

EPA Hazardous Waste No.	Chemical Name	Concentration Range Low	Mean	High	(Units)
(1)					
(2)					
(3)					
(4)					

(Attach additional sheets if necessary.)

Waste Stream Characterization Data Sheet

1. Waste Stream No.: O N L O - 0 0 0 0 0 0 0 0 4
   20%-100% U by weight

2. Physical Characteristics:

   a. Density: 50-150 lb./cu.ft. (bulk density as packaged)

   b. Moisture Content: no free liquids (generally less than 1% water)

   c. Organic Material Content: none

3. Radioactive Characteristics:

   a. Is Waste > NRC Class C (see Title 10 CFR 61.55) ?: no

   b. SWIMS Nuclide Category (circle): 1 (2) 3 4 5 6 7 8

   c. Radioactive Constituents:

Nuclide	Specific Activity Range Low	Mean	High	Units
(1) U-238 (1% to 20% U)		0.3330E-06		Curies/gram U-238
(2) U-235 (0.2% to 2.0% U-235)		0.2140E-05		Curies/gram U-235
(3) U-234 (0.001% to 0.01% U-234 on a U basis)		0.3360E-06		Curies/gram Tot
(4)				

4. Hazardous Characteristics (for mixed waste):

   a. Basis for Identifying as Mixed Waste (circle): (1) Ignitable (2) Reactive (3) Corrosive (4) EP Toxicity or TCLP (5) Listed Waste

   b. Is this a Restricted Waste (see Title 40 CFR 268)?: _____

   c. Hazardous Constituents:

EPA Hazardous Waste No.	Chemical Name	Concentration Range Low	Mean	High	(Units)
(1)					
(2)					
(3)					
(4)					

(Attach additional sheets if necessary.)

3511

Waste Stream Characterization Data Sheet

1. Waste Stream No.: O N L O - O O O O O O O O 5
   1-100% Thorium by weight

2. Physical Characteristics:

   a. Density: 50-150 lb./cu.ft. (bulk density as packaged)

   b. Moisture Content: no free liquids (generally less than 1% water)

   c. Organic Material Content: none

3. Radioactive Characteristics:

   a. Is Waste > NRC Class C (see Title 10 CFR 61.55) ?: no

   b. SWIMS Nuclide Category (circle): 1 (2) 3 4 5 6 7 8

   c. Radioactive Constituents:

Nuclide	Specific Activity Range Low	Mean	High	Units
(1) Th-232 (.1% to 100% Th)		0.1090E-06		Curies/gram Th
(2) Th-228 (natural %)		0.1096E-06		Curies/gram Th
(3) U-233 (13 ppm on a Th basis)		0.1232E-06		Curies/gram Th
(4) Th-230 (natural %)		0.1100E-07		Curies/gram Th

4. Hazardous Characteristics (for mixed waste):

   a. Basis for Identifying as Mixed Waste (circle): (1) Ignitable (2) Reactive (3) Corrosive (4) EP Toxicity or TCLP (5) Listed Waste

   b. Is this a Restricted Waste (see Title 40 CFR 268)?: _____

   c. Hazardous Constituents:

EPA Hazardous Waste No.	Chemical Name	Concentration Range Low	Mean	High	(Units)
(1)					
(2)					
(3)					
(4)					

662

(Attach additional sheets if necessary.)

888

MAPSHE
/15/91

RESIDUES SPECIA .PORT REQUEST

TIVITY DA 10/01/87 thru 01/10/90

THOD CODES: ZU

A - VOLUMETRIC
B - GRAVIMETRIC
C - COLORIMETRIC

E - VOLUMETRIC
F - FACTOR ASSAY
* - TWO OR MORE

U-235
R - GAMMA
S - GAS MASS. SPEC.
T - THERMAL MASS SPEC.

TRANSURANICS
A - URANIUM
B - SAMPLE
C - U-235
D - ANU

DT	IDENTIFICATION	LAB NO.	BCON	NET WT	SE	ZU	U-235	U-238
093 100	D011	0328	90412019	40	26699.0	OR	A12.230	T1.410
093 100	D011	A328	90412010	40	26103 0	OR	A11 000	T1.710
093 100	D011	B328	90414001	40	22214.0	OR	A1 980	T1.430
093 100	D011	C328	90414002	6	3039.0	OR	C1.150	T1.530
690 510	D011	0314	80314043	3	841.0	OR	C1 20	T1.230
093 510	D011	0311	71216028	2	255.0	OR	C1.03	T1.250
690 530	D011	0312	90209053	9	3154.0	OR	C1.08	T1.200
093 530	D011	0309	71107213	21	8862.0	OR	C12.27	T1.2270
082 732	D011	0308	71013053	4	181.0	OR	C12.68	T1.1950
082 732	D011	0311	71107212	5	123.0	OR	C12.98	R1.2000
082 732	D011	0318	80112047	3	84.0	OR	A13.22	R1.20
082 732	D011	0313	80218003	4	123.0	OR	C12.40	T1.220
082 732	D011	0314	80318048	6	149.0	OR	C12.96	T1.206
082 732	D011	0315	80330058	2	42.0	OR	C13.09	B1.1995
082 732	D017	0308	71013052	3	95.0	OR	A145.66	R1.2000
082 732	D017	0311	71202048	2	29.0	OR	A142.12	R1.20
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
093 130	D021	0327	90411010	4	1321 0	OR	A1 640	T1.600
320 142	D021	0318	80623024		0	OR	C11.900	T1.605
190 510	D021	0313	80226021	5	1925 0	OR	A1.70	T1.274
190 510	D021	0315	80415025	2	2366.0	OR	A141.69	R1.20
193 510	D021	0299	71204067	5	2053.0	OR	A12 44	T1.239
193 510	D021	0301	71013056	2	4421.0	OR	A12.25	R1.2000
193 510	D021	0303	71013057	1	706 0	OR	C1 05	T1.2900
193 510	D021	0305	71013058	1	934.0	OR	C1.06	T1.3000
193 510	D021	0310	71119016	5	2863 0	OR	A11.65	T1.233
65 510	D021	A311	80119055	8	5260.0	OR	C11.81	T1.651
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
93 630	[illegible]	[illegible]	[illegible]	3	684.0	OR	C1.36	T1.344
93 630	[illegible]	[illegible]	[illegible]	4	1103.0	OR	C1.40	T1.044
93 630	[illegible]	[illegible]	[illegible]	3	1004.0	OR	C1.44	T1.004
93 631	[illegible]	[illegible]	[illegible]	4	1545.0	OR	C1.44	T1.040
93 631	[illegible]	[illegible]	[illegible]	3	387.0	OR	C1.00	T1.044
93 630	[illegible]	[illegible]	[illegible]	3	964.0	OR	C1.30	T1.0440
93 631	[illegible]	[illegible]	[illegible]	3	633.0	OR	C1.46	T1.0440
93 631	[illegible]	[illegible]	[illegible]	5	1463.0	OR	A1.44	T1.040
93 630	[illegible]	[illegible]	[illegible]	5	1431.0	OR	A14.36	T1.346
93 631	[illegible]	[illegible]	[illegible]	1	76.0	OR	A1.42	T1.34
[illegible]	[illegible]	[illegible]	90924006		0	OR	A150.330	T1 62[illegible]
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible] 77	T1 209

500

3.99

663

PC LOT MARK	SAMPLE CODE	CONCENTRATION OF EP TOXICITY ELEMENTS IN mg/l (ppm)						FROM IT CORP	
		ARSENIC	BARIUM	CADMIUM	CHROMIUM	LEAD	SELENIUM	SILVER	MERCURY
93-516-D017-0282	12-31	<0.2	0.755	0.002	<0.02	<0.05	<0.2	0.02	<0.0002
93-658-D069-0293	37-32	1.1	0.494	0.020	0.04	<0.5	<0.2	0.42	<0.0002
22-FTA-D068-6443	15-33	<0.2	0.819	0.012	0.06	<0.5	<0.2	0.31	<0.0002
93-530-D065-0267	3-34	2.2	0.629	0.037	0.06	1.1	<0.2	0.81	<0.0002
93-827-D058-0269	31-105	<0.2	0.28	<0.005	0.06	<0.05	<0.2	<0.01	<0.0002
92-440-D082-0301	3-106	1.5	0.27	0.02	0.23	<0.05	<0.2	0.55	<0.0002
24-400-D082-0303	1-107	1.4	0.18	0.017	<0.02	<0.05	<0.2	0.44	<0.0002
23-518-D077-0275	4-108	0.7	0.03	0.006	<0.02	<0.05	<0.2	0.148	<0.0002
23-510-D020-0273	3-109	<0.2	0.36	0.044	0.04	<0.05	<0.2	<0.01	<0.0002
20-100-D157-0280	1-110	<0.2	0.14	0.09	0.07	0.06	<0.2	1.15	<0.0002
59-FYC-D018-0116	11-63	<0.2	147	<0.005	<0.02	<0.05	<0.2	0.14	0.0985
70-240-D033-0266	25-66	<0.2	2.50	0.020	<0.02	<0.05	<0.2	<0.01	<0.0002
8-112-D163-0202	63-67	0.4	2.18	<0.005	0.33	<0.05	<0.3	0.06	<0.0002
-643-D042-0286	9-53	0.36	0.747	0.008	<0.02	<0.05	<0.2	0.20	<0.0002

1

Jul-90

428

C LOT MARK	SAMPLE CODE	CONCENTRATION OF EP TOXICITY ELEMENTS IN mg/l (ppm)						FROM IT CORP	
		ARSENIC	BARIUM	CADMIUM	CHROMIUM	LEAD	SELENIUM	SILVER	MERCURY
8-731-D065-0285	1-83	<0.2	0.04	0.025	0.03	1.78	<0.2	0.41	<0.0002
2-440-D065-6897	30-73	1.6	16.4	<0.005	0.04	<0.05	<0.2	0.63	<0.0002
7 OR ? UNK									
9-FYC-D065-0116	13-74	0.2	1.13	0.373	1.31	<0.05	<0.2	<0.01	<0.0002
4-735-D068-0266	13-75	0.9	0.30	0.399	0.24	0.24	<0.2	0.19	<0.0002
0-FYC-D069-0116	22-76	<0.2	0.25	0.158	0.21	<0.05	<0.2	<0.01	<0.0002
0-732-D047-0285	4-77	<0.2	0.75	0.240	0.285	0.13	<0.2	2.70	<0.0002
3-642-D044-0275	7-59	<0.2	2.36	0.022	1.58	<0.05	<0.2	0.20	<0.0002
3-642-D060-0262	11-60	<0.2	3.24	0.024	0.52	0.18	<0.2	0.51	0.0004
0-611-D060-0184	10-61	1.0	12900	<0.005	<0.02	0.32	0.2	<0.01	<0.0002
1-322-D062-0280	4-62	<0.2	0.299	0.006	0.14	<0.05	<0.2	0.59	<0.0002
7-112-D031-0375	66-64	<0.2	7.1	0.041	0.13	1.18	<0.2	<0.01	0.0004
3-112-D033-3145	11-65	<0.2	0.377	0.048	0.17	<0.05	<0.2	<0.01	<0.0002
3-240-D033-0253	21-68	0.3	1.65	0.139	3.38	0.26	<0.2	0.03	<0.0002
3-FYC-D018-0116	11-69	<0.2	0.20	<0.005	<0.02	<0.05	<0.2	<0.01	0.0005

3

C LOT MARK	SAMPLE CODE	CONCENTRATION OF EP TOXICITY ELEMENTS IN mg/l (ppm)							FROM II CORP
		ARSENIC	BARIUM	CADMIUM	CHROMIUM	LEAD	SELENIUM	SILVER	MERCURY
0-240-D033-0272	37-70	<0.2	0.17	<0.005	1.50	<0.05	<0.02	<0.01	<0.0002
6-FYA-D033-3315	1-71	0.9	0.48	0.122	0.31	5.22	<0.2	0.24	<0.0002
2-732-D047-0266	3-72	<0.2	0.23	0.23	0.10	0.14	<0.2	0.79	<0.0002
3-510-D046-0301	3-114	<0.2	0.003	<0.005	0.033	<0.05	<0.2	<0.01	<0.0002
4-440-D082-5974	37-111	2.7	0.09	0.040	0.05	<0.05	<0.2	1.03	<0.0002
3-533-D135-0272	3-35	0.5	0.417	0.008	<0.02	<0.5	<0.2	0.22	<0.0002
0-240-D033-0277	45-39	<0.2	0.531	<0.002	0.07	<0.05	<0.2	<0.01	<0.0002
7-825-D154-5152	61-101	<0.2	1.41	0.044	0.09	0.08	<0.2	1.028	<0.0002
3-F1A-D067-6392	4-78	0.8	22.4	0.031	0.15	0.64	<0.2	0.24	<0.0002
3-965-D069-0194	21-80	<0.2	<0.2	<0.005	<0.02	<0.05	<0.2	<0.01	<0.0002
5-221-D022-0275	4-81	0.4	0.77	<0.005	<0.02	<0.05	<0.2	0.09	<0.0002
1-520-D058-0285	5-98	<0.2	0.33	<0.005	<0.02	<0.05	<0.2	<0.01	<0.0002
1-518-D057-0292	4-99	<0.2	0.28	0.008	0.09	<0.05	<0.2	1.84	<0.0002
1-516-D070-0294	23-102	<0.2	0.30	0.009	2.46	<0.05	<0.2	2.25	<0.0002

ACTIVITY DATE: 10/01/87 thru 01/10/90

METHOD CODES: XU

A - VOLUMETRIC
B - GRAVIMETRIC
C - COLORIMETRIC
E - VOLUMETRIC
F - FACTOR ASSAY
* - TWO OR MORE

U-235
R - GAMMA
S - GAS MASS SPEC
T - THERMAL MASS SPEC.

TRANSURANICS
A - URANIUM
B - SAMPLE
C - U-235
D - ANU

OT	IDENTIFICATION	LAB NO	ACCN	NET	UT	SE	XU	U-235	U-238
003	811	V002	W001	71103051	60	18274	.0 OR	4.22	T1.2820 99.7180
003	811	V002	W002	71103052	60	18125	.0 OR	.20	T1.3700 99.6200
003	811	V002	W003	71103053	60	17415	.0 OR	.34	T1.4700 99.5000
003	811	V002	W004	71106058	60	18149	.0 OR	.18	T1.6300 99.3400
003	811	V002	W005	71109045	60	18478	.0 OR	.19	T1.6400 99.3300
003	811	V002	W006	71109046			.0 OR	.22	T1.8000 99.1600
003	811	V002	W007	71112049			.0 OR	C1.19	T1.7990 99.1600
003	811	V002	W008	71117001			.0 OR	C1.68	T1.8690 99.0800
003	811	V002	W009	71117002			.0 OR	C1.32	T1.8990 99.0500
003	811	V002	W010	71123114			.0 OR	C1.23	T1.8330 99.1200
003	811	V002	W011	71123115			.0 OR	C1.18	T1.8500 99.1100
003	811	V002	W012	71123116			.0 OR	C1.07	T1.7600 99.2100
003	811	V002	W013	71203112			.0 OR	C1.20	T1.6900 99.2000
003	811	V002	W014	71203113			.0 OR	C1.17	T1.8300 99.1200
003	811	V002	W015	71208057			.0 OR	C1.15	T1.9100 99.0500
003	811	V002	W016	80123317			.0 OR	C1.28	T1.860 99.1100
003	811	V002	W017	71215001			.0 OR	C1.38	T1.8700 99.0800
003	811	V002	W018	71215002			.0 OR	C1.29	T1.8800 99.0800
003	811	V002	W019	71215003			.0 OR	C1.38	T1.8600 99.0900
003	811	V002	W020	80123318	60	12619	.0 OR	C1.20	T1.870 99.1000
003	811	V002	W021	80123319			.0 OR	C1.38	T1.850 99.1200
003	811	V002	W022	80123320			.0 OR	C1.76	T1.820 99.1500
003	811	V002	W023	80123321			.0 OR	C1.21	T1.880 99.0900
003	811	V002	W024	80308053			.0 OR	C1.27	T11.000 98.9600
003	811	V002	W025	80112006			.0 OR	C1.07	T1.900 99.0500
003	811	V002	W026	80112007			.0 OR	C1.25	T1.980 98.9800
003	811	V002	W027	80308054			.0 OR	C1.38	T11.030 98.9300
003	811	V002	W028	80308055			.0 OR	C1.72	T1.960 99.0000
003	811	V002	W029	80120002			.0 OR	C1.67	T11.030 98.9300
003	811	V002	W030	80123322			.0 OR	C1.66	T1.880 99.0800
003	811	V002	W031	80125001			.0 OR	C11.01	T1.910 99.0500
003	811	V002	W032	80203039			.0 OR	C1.90	T1.890 99.0800
003	811	V002	W033	80203040			.0 OR	C11.16	T1.820 99.1500
003	811	V002	W034	80210002			.0 OR	C1.61	T1.840 99.1300
003	811	V002	W036	80222028			.0 OR	C1.98	T1.850 99.1300
003	811	V002	W037	80222029			.0 OR	C1.71	T11.000 98.9500
003	811	V002	W038	80227040			.0 OR	C1.44	T1.800 99.1700
003	811	V002	W039	80307035			.0 OR	C1.19	T1.850 99.1100
003	811	V002	W040	80307036			.0 OR	C1.15	T1.820 99.1500
003	811	V002	W041	80307037			.0 OR	C1.30	T1.910 99.0500
003	811	V002	W042	80315018			.0 OR	C1.25	T11.060 99.9000
003	811	V002	W043	80314046			.0 OR	C1.03	T1.880 99.0800
003	811	V	044	80321001			.0 OR	C1.13	T1.950 99.0200
003	811	V	5	80322002			.0 OR	C1.11	T11.01[illegible] [illegible]9400
003	811	V	6	80322003			.0 OR	C1.06	T1.97[illegible] [illegible]100
								C1.05	T1.970 [illegible]800

01/15/90 RESIDUES SPECIAL REPORT REQUEST

ACTIVITY DAT[illegible]8/01/87 thru 01/10/90

METHOD CODES - XU

A - VOLUMETRIC
B - GRAVIMETRIC
C - COLORIMETRIC
E - VOLUMETRIC
F - FACTOR ASSAY
* - TWO OR MORE

U-235

R - GAMMA
S - GAS MASS SPEC
T - THERMAL MASS SPEC.

TRANSURANICS

A - URANIUM
B - SAMPLE
C - U-235
D - ANU

LOT IDENTIFICATION	LAB NO.	SCON	NET	UT	SE	XU	U-235	U-238
N003 811 V002 W100	80808003			0	OR	C1.430	T1.790	99.1900
N003 811 V002 W101	80808002			0	OR	C1.300	T1.790	99.1800
N003 811 V002 W102	80815001			0	OR	C1.170	T1.950	99.0100
N003 811 V002 W103	80816001			0	OR	C1.089	T1.980	98.9800
N003 811 V002 W104	80817002			0	OR	C1.092	T1.920	99.0300
N003 811 V002 W105	80823032			0	OR	C1.290	T1.940	98.9900
N003 811 V002 W106	80823002			0	OR	C1.100	T1.950	98.9500
N003 811 V002 W107	80823033			0	OR	C1.100	T11.000	98.9500
N003 811 V002 W108	80828021			0	OR	C1.120	T1.970	98.9700
N003 811 V002 W110	80829022			0	OR	C1.088	T1.620	99.3500
N003 811 V002 W111	80830060			0	OR	C1.210	T1.640	99.3400
N003 811 V002 W112	80913030			0	OR	C1.140	T1.980	98.9700
N003 811 V002 W113	80906034			0	OR	C1.160	T11.000	98.9600
N003 811 V002 W114	80906035			0	OR	C1.100	T11.070	98.8900
N003 811 V002 W115	81006003			0	OR	C1.170	T1.890	99.0600
N003 811 V002 W116	90213001			0	OR	C1.350	T1.810	99.1500
N003 811 V002 W117	90213002			0	OR	C1.430	T1.820	99.1400
N003 811 V002 W118	90215048			0	OR	C1.590	T1.730	99.2300
N003 811 V002 W119	90223001			0	OR	C1.560	T1.810	99.1500
N003 811 V002 W120	90224001			0	OR	C1.150	T1.940	99.0100
N003 811 V002 W121	90303056			0	OR	C1.120	T1.860	99.0900
N003 811 V002 W122	90307064			0	OR	C1.060	T11.050	98.9000
N003 811 V002 W123	90310001			0	OR	C1.080	T1.910	99.0400
N003 811 V002 W124	90313050			0	OR	C1.190	T1.790	99.1000
N003 811 V002 W125	90313051			0	OR	C1.160	T1.840	99.1200
N003 811 V002 W126	90316001			0	OR	C1.350	T11.010	98.9300
N003 811 V002 W127	90317001			0	OR	C1.800	T11.010	98.9400
N003 811 V002 W128	90320001			0	OR	C1.390	T11.000	98.9500
N003 811 V002 W129	90411001			0	OR	C1.560	T1.960	98.9900
N003 811 V002 W130	90413001			0	OR	C1.490	T11.020	98.9300
N003 811 V002 W131	90417002			0	OR	C1.250	T11.020	98.9200
N003 811 V002 W132	90421003			0	OR	C1.110	T11.020	98.9300
N003 815 V002 W001	91003001			0	OR	C1.040	T1.910	99.0400
N003 817 V002 W001	90825001			0	OR	C1.100	T1.600	99.3700
N003 817 V002 W002	90929001			0	OR	C14.690	T1.970	98.9000
N003 817 V002 W033	91018002			0	OR	C11.500	T1.910	99.0300
N002 826 V002 W018	71106059			0	OR	.06	T1.9800	98.9600
N002 826 V002 W019	71106060			0	OR	.25	T1.9000	99.0600
N003 826 V002 W009	71028054	60	13987	0	OR	.47	T1.4600	99.5200
N003 826 V002 W010	71026075	60	15908	0	OR	.36	T1.9500	99.0000
N003 826 V002 W011	71026076	60	13771	0	OR	.38	T1.7500	99.2200
N003 826 V002 W012	71026077	60	17183	0	OR	.65	T1.6800	99.2900
N003 826	W013	71026079	60	14325	0	OR	.18	T1.7200	99.2500
N003 826	W014	71028055	60	14310	0	OR	.44	T1.96[illegible]	98.9900
N003 826	W015	71028056	60	14472	0	OR	.14	T1.79	19.1700
N003 826	[illegible]	[illegible]	60	14419	0	OR	.056	T1 92[illegible]	0200
								9500

01/15/90

ACTIVITY DA 9/01/87 thru 01/10/90

METHOD CODES: XU

A - VOLUMETRIC
B - GRAVIMETRIC
C - COLORIMETRIC

E - VOLUMETRIC
F - FACTOR ASSAY
* - TWO OR MORE

U-235

R - GAMMA
S - GAS MASS SPEC.
T - THERMAL MASS SPEC.

TRANSURANICS

A - URANIUM
B - SAMPLE
C - U-235
D - ANU

LOT IDENTIFICATION	LAB NO	ACON	NET WT	SE	XU	U-235	U-238
N003 811 V002	U051 80328033		.0	OR	C) .05	T) 1.030	98.9300
N003 811 V002	U052 80330060		.0	OR	C) .04	T) 1.000	98.9500
N003 811 V002	U053 80403002		.0	OR	C) .04	T) .980	98.9800
N003 811 V002	U054 80403003		.0	OR	C) .06	T) .950	99.0100
N003 811 V002	U055 80405021		.0	OR	C) .05	T) 1.060	98.8900
N003 811 V002	U056 80407020		.0	OR	C) .08	T) .950	99.0100
N003 811 V002	U057 80409002		.0	OR	C) .16	T) .910	99.0400
N003 811 V002	U058 80411001		.0	OR	C) .16	T) .940	99.0100
N003 811 V002	U059 80413020		.0	OR	C) .98	T) .960	98.9900
N003 811 V002	U060 80415070		.0	OR	C) 1.13	T) .940	99.0100
N003 811 V002	U061 80417038		.0	OR	C) .70	T) .950	99.0000
N003 811 V002	U062 80420072		.0	OR	C) .45	T) .690	99.2900
N003 811 V002	U063 80421003		.0	OR	C) .50	T) .740	99.2500
N003 811 V002	U064 80509025	61	19357.0	OR	C) .34	T) .880	99.0700
N003 811 V002	U065 80425084		.0	OR	C) .30	T) .860	99.1000
N003 811 V002	U066 80427068		.0	OR	C) .27	T) .900	99.0600
N003 811 V002	U067 80502025		.0	OR	C) .24	T) .920	99.0300
N003 811 V002	U068 80504015		.0	OR	C) .21	T) .930	99.0300
N003 811 V002	U069 80506054		.0	OR	C) .63	T) .870	99.0900
N003 811 V002	U070 80508001		.0	OR	C) .14	T) .860	99.0900
N003 811 V002	U071 80511032		.0	OR	C) .52	T) .850	99.1100
N003 811 V002	U072 80512002		.0	OR	C) .26	T) .890	99.0700
N003 811 V002	U073 80516025		.0	OR	C) .10	T) .900	99.0500
N003 811 V002	U074 80516026		.0	OR	C) .16	T) .890	99.0700
N003 811 V002	U075 80518004		.0	OR	C) .07	T) .910	99.0500
N003 811 V002	U076 80606001		.0	OR	C) .20	T) .920	99.0300
N003 811 V002	U077 80523002		.0	OR	.09	T) .900	99.0600
N003 811 V002	U078 80524002		.0	OR	C) .06	T) .950	99.0100
N003 811 V002	U079 80523004		.0	OR	C) .07	T) .950	99.0000
N003 811 V002	U080 80529002		.0	OR	C) .12	T) .910	99.0400
N003 811 V002	U081 80531002		.0	OR	C) .06	T) .960	99.0000
N003 811 V002	U082 80601019		.0	OR	C) .07	T) .950	99.0000
N003 811 V002	U083 80604107		.0	OR	C) .05	T) 1.040	98.9100
N003 811 V002	U084 80606002		.0	OR	C) .09	T) 1.140	98.8100
N003 811 V002	U085 80608010		.0	OR	C) .08	T) 1.150	98.8000
N003 811 V002	U087 80617002		.0	OR	C) .047	T) 1.070	98.8000
N003 811 V002	U088 80624001		.0	OR	C) .570	T) .310	99.6700
N003 811 V002	U089 80627001		.0	OR	C) .400	T) .390	99.5900
N003 811 V002	U090 80628038		.0	OR	C) .063	T) .940	99.0200
N003 811 V002	U091 80630028		.0	OR	C) .110	T) .850	99.1100
N003 811 V002	U092 80705002		.0	OR	C) 1.080	T) .480	99.5100
N003 811 V002	U093 80706001		.0	OR	C) .110	T) .700	99.2700
N003 811 V002	U094 80708001		.0	OR	C) .430	T) .970	98.9900
N003 811 V002	U095 80710002		.0	OR	C) .310	T) .950	99.0000
N003 811 V002	U096 80712002		.0	OR	C) .220	T) 1.000	98.9600
N003 811 V002	U097 80714001		.0	OR	C) .270	T) .860	99.1100
N003 811 V002	U098 80716002		.0	OR	C) .400	T) .920	99.0500

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1/15/90
CTIVITY DA /01/87 thru 01/10/90

RESIDUES SPECIA RT REQUEST

ETHOD CODES: XU

A - VOLUMETRIC
B - GRAVIMETRIC
C - COLORIMETRIC
E - VOLUMETRIC
F - FACTOR ASSAY
* - TWO OR MORE

U-235
R - GAMMA
S - GAS MASS SPEC.
T - THERMAL MASS SPEC.

TRANSURANICS
A - URANIUM
B - SAMPLE
C - U-235
D - ANU

DT	IDENTIFICATION	LAB NO	BCON	NET WT	SE	XU	U-235	U-238
003	826 V002 W021	71118091			0 OR	C).12	T).9700	98.9700
003	826 V002 W022	71112048			.0 OR	C).31	T)1.0100	98.9300
003	826 V002 W023	71113050			0 OR	C).54	T)1.0500	98.8900
003	826 V002 W024	71123109			.0 OR	C).30	T).9070	99.0400
003	826 V002 W025	71123110			0 OR	C).24	T).9040	99.0400
003	826 V002 W026	71123111			.0 OR	C).20	T).9550	98.9900
003	826 V002 W027	71123112			0 OR	C).21	T).9760	98.9700
003	826 V002 W028	71123113			.0 OR	C).09	T).960	98.9800
003	826 V002 W029	71125004			0 OR	C).15	T).9600	98.9900
003	826 V002 W030	71203111			.0 OR	C).39	T).9600	98.9900
003	826 V002 W031	71209064			0 OR	C).12	T).9900	98.9600
003	826 V002 W032	71209065			.0 OR	C).28	T).9500	99.0000
003	826 V002 W033	71210064			.0 OR	C).14	T).9500	98.9900
003	826 V002 W034	71215004			.0 OR	C).23	T).8300	99.1300
003	826 V002 W035	71215005			0 OR	C).09	T)1.0000	98.9500
003	826 V002 W036	71216027	60	13158	.0 OR	C)1.37	T).7000	99.2600
003	826 V002 W037	71221003	60	13899	0 OR	C).22	T).8500	99.1000
003	826 V002 W038	71221004			.0 OR	C).22	T).9600	98.9800
003	826 V002 W039	80107046			0 OR	C).19	T).970	98.9800
003	826 V002 W040	80106002			.0 OR	C).32	T).940	99.0000
003	826 V002 W041	80108056			0 OR	C).09	T).920	99.0200
003	826 V002 W042	80111057			.0 OR	C).28	T).770	99.2100
003	826 V002 W043	80112005			0 OR	C).40	T).940	99.0100
003	826 V002 W044	80114001			.0 OR	C).30	T)1.040	98.9100
003	826 V002 W045	80118057			0 OR	C).13	T)1.030	98.9300
003	826 V002 W046	80118058			.0 OR	C).06	T).940	99.0200
003	826 V002 W047	80123323			0 OR	C).42	T).930	99.0300
003	826 V002 W048	80122001			.0 OR	C).22	T).920	99.0400
003	826 V002 W049	80125080			0 OR	C).21	T).850	99.1100
003	826 V002 W050	80125097			.0 OR	C).42	T).890	99.0800
003	826 V002 W050	80225075			0 RE			99.0800
003	826 V002 W051	80203041			.0 OR	C).70	T).910	99.0600
003	826 V002 W052	80202037			0 OR	C).44	T).940	99.0200
003	826 V002 W053	80204038			.0 OR	C).52	T).930	99.0300
003	826 V002 W054	80209033			0 OR	C)1.12	T).820	99.1600
003	826 V002 W055	80209034			.0 OR	C).76	T).960	99.0000
003	826 V002 W056	80212031			0 OR	C).57	T).940	99.0200
003	826 V002 W057	80212032			.0 OR	C).68	T).840	99.1400
003	826 V002 W058	80308052			0 OR	C)1.02	T).820	99.1500
003	826 V002 W059	80322023			.0 OR	C).53	T).800	99.1700
003	826 V002 W060	80327002			0 OR	C).16	T).930	99.0300
003	826 V002 W061	80328034			.0 OR	C).03	T)1.020	98.9300
003	826 V002 W062	80330001			0 OR	C).03	T)1.060	98.8900
003	826 V002 W063	80403001			0 OR	C).04	T).950	99.0000
003	826 V002 W064	80404002			0 OR	C).08	T).910	99.0500
003	826 V002 W065	80406094			0 OR	C).04	T)1.080	99.0600
003	826 V002 W066	80409001			0 OR	C).20	T).950	99.0000
							T).910	99.0500

670

3511

1/15/90
CTIVITY DATE: 10/01/87 thru 01/10/90

METHOD CODES: %U
A - VOLUMETRIC
B - GRAVIMETRIC
C - COLORIMETRIC
E - VOLUMETRIC
F - FACTOR ASSAY
* - TWO OR MORE

U-235
R - GAMMA
S - GAS MASS SPEC.
T - THERMAL MASS SPEC.

TRANSURANICS
A - URANIUM
B - SAMPLE
C - U-235
D - ANU

OT	IDENTIFICATION	LAB NO.	SCON	NET WT	SE	%U	U-235	U-238
003	026 V002 W068	80412020		.0	OR	C).99	T).920	99.0300
003	026 V002 W069	80504025	02	12152.0	OR	C).40	T).720	99.2600
003	026 V002 W070	80418018		.0	OR	C).75	T).860	99.1800
003	026 V002 W071	80418019		.0	OR	C).16	T).740	99.2400
003	026 V002 W072	80608001		.0	OR	C).04	T).770	99.2100
003	026 V002 W073	80612001		.0	OR	C).10	T).910	99.0400
003	026 V002 W074	80627002		.0	OR	C).054	T)1.010	98.9300
003	026 V002 W075	80627003		.0	OR	C).220	T).970	98.9800
003	026 V002 W076	80628002		.0	OR	C).180	T)1.170	98.7700
003	026 V002 W077	80703018		.0	OR	C).085	T)1.120	98.8200
003	026 V002 W078	80706001		.0	OR	C).050	T).870	99.0800
003	026 V002 W079	80707001		.0	OR	C).150	T).990	98.9500
003	026 V002 W080	80710001		.0	OR	C).320	T)1.080	98.9400
003	026 V002 W081	80710003		.0	OR	C).140	T).980	98.9800
003	026 V002 W082	80712001		.0	OR	C).080	T)1.000	98.9600
003	026 V002 W083	80714002		.0	OR	C).050	T)1.070	98.8700
003	026 V002 W084	80720001		.0	OR	C).080	T)1.070	98.8700
003	026 V002 W085	80721001		.0	OR	C).130	T).910	99.0500
003	026 V002 W086	80726001		.0	OR	C).220	T).820	99.0900
003	026 V002 W087	80727001		.0	OR	C).530	T).770	99.2100
003	026 V002 W088	80730001		.0	OR	C).120	T).810	99.1500
003	026 V002 W089	80803013		.0	OR	C).400	T).920	99.0300
003	026 V002 W090	80808004		.0	OR	C).210	T).740	99.2400
003	026 V002 W091	80808005		.0	OR	C).130	T)1.160	98.7800
003	026 V002 W092	80823031		.0	OR	C).058	T)1.060	98.8900
003	026 V002 W094	80812001		.0	OR	C).120	T).980	98.9700
003	026 V002 W095	80815002		.0	OR	C).080	T)1.180	98.7600
003	026 V002 W096	80817003		.0	OR	C).032	T)1.060	98.8900
003	026 V002 W097	80820003		.0	OR	C).080	T).980	98.9700
003	026 V002 W098	80821001		.0	OR	C).040	T)1.050	98.8900
003	026 V002 W100	90308001		.0	OR	C).210	T).800	99.1500
003	026 V002 W101	90530001		.0	OR	C).190	T).980	98.9700
003	026 V002 W102	90530002		.0	OR	C).180	T)1.010	98.9400
003	026 V002 W103	90605001		.0	OR	C).340	T)1.000	98.9500
003	026 V002 W104	90608001		.0	OR	C).060	T).400	99.5100
003	026 V002 W105	90619002		.0	OR	C).130	T).990	98.9600
003	026 V002 W106	90619003		.0	OR	C).080	T).880	99.0800
003	026 V002 W107	90622007		.0	OR	C).070	T).920	99.0300
003	026 V002 W108	90622008		.0	OR	C).050	T).940	99.0200
003	026 V002 W109	90627001		.0	OR	C).080	T)1.040	98.9100
003	026 V002 W110	91018001		.0	OR	C).442	T)1.000	98.9500
003	026 V003 W020	71109047		.0	OR	.42	T).0000	99.1500

******* END-OF-REPORT ***********

ACTIVITY 10/01/87 thru 01/10/90

METHOD CODES: XU

A - VOLUMETRIC
B - GRAVIMETRIC
C - COLORIMETRIC
E - VOLUMETRIC
F - FACTOR ASSAY
* - TWO OR MORE

U-235
R - GAMMA
S - GAS MASS SPEC
T - THERMAL MASS SPEC.

TRANSURANICS
A - URANIUM
B - SAMPLE
C - U-235
D - ANU

LOT IDENTIFICATION	LAB NO	BCON	NET WT SE		XU	U-235	U-238
W050 100 P003 A036	90112013			0 OR	C)3.500		
W050 100 P003 A041	90112012			0 OR	C).040		
W050 742 P003 5325	90410033	16	11506	0 OR	C).030	T).540	99.4500
W050 742 P003 5327	90410034	12	8315	0 OR	C).020	T).530	99.4600

********** END-OF-REPORT **********

ACTIVITY DATE: 10/01/87 THRU 01/10/90

METHOD CODES: XU

A - VOLUMETRIC
B - GRAVIMETRIC
C - COLORIMETRIC
E - VOLUMETRIC
F - FACTOR ASSAY
* - TWO OR MORE

U-235
R - GAMMA
S - GAS MASS SPEC.
T - THERMAL MASS SPEC.

TRANSURANICS
A - URANIUM
B - SAMPLE
C - U-235
D - ANU

LOT IDENTIFICATION	LAB NO	BCON	NET WT	SE		XU	U-235	U-238
N003 811 V069 U001	90419001			.0	OR	C14.290	T1.810	99.1500
N003 811 V069 U002	90421001			.0	OR	C13.440	T1.810	99.1400
N003 811 V069 U003	90425001			.0	OR	C11.600	T1.670	99.2900
N003 811 V069 U004	90505001			.0	OR	C12.100	T1.680	99.2800
N003 811 V069 U005	90502001			.0	OR	C15.180	T1.970	98.9900
N003 811 V069 U006	90504001			.0	OR	C17.430	T11.030	98.9200
N003 811 V069 U007	90505002			.0	OR	C15.080	T11.060	98.8800
N003 811 V069 U008	90510002			.0	OR	C13.110	T1.700	99.2600
N003 817 V069 U001	80802017			.0	OR	C12.210	T1.940	99.0000
N003 817 V069 U002	80802018	61	18137	.0	OR	C11.280	T1.870	99.0800
N003 817 V069 U003	80802019			.0	OR	C1.380	T1.859	99.0900
N003 817 V069 U007	80809001			.0	OR	C1.240	T1.990	98.9500
N003 817 V069 U008	80823004			.0	OR	C11.020	T1.961	98.9800
N003 817 V069 U009	80913031			.0	OR	C1.250	T1.810	99.1500
N003 817 V069 U010	80913032			.0	OR	C1.300	T1.820	99.1400
N003 817 V069 U011	80920001			.0	OR	C1.380	T1.770	99.1900
N003 817 V069 U012	80927001			.0	OR	C11.800	T1.859	99.0910
N003 817 V069 U013	81006002			.0	OR	C11.340	T1.910	99.0400
N003 817 V069 U014	81012001			.0	OR	C1.680	T1.850	99.1020
N003 817 V069 U015	81110001			.0	OR	C1.210	T1.790	99.1700
N003 817 V069 U016	81104001			.0	OR	C1.050	T1.770	99.1900
N003 817 V069 U020	90221001			.0	OR	C1.620	T1.750	99.2100
N003 817 V069 U021	90308002			.0	OR	C1.520	T1.930	99.0100
N003 817 V069 U022	90329001			.0	OR	C1.580	T1.930	99.0200
N003 817 V069 U023	90410001			.0	OR	C11.800	T1.910	99.0600
N003 817 V069 U024	90421002			.0	OR	C13.130	T1.980	98.9700
N003 817 V069 U025	90510003			.0	OR	C1.590	T1.950	99.0000
N003 817 V069 U026	90530003			.0	OR	C1.690	T1.970	98.9700
N003 817 V069 U027	90618001	60	16284	.0	OR	C1.560	T1.930	99.0200
N003 817 V069 U027	90622006	60	16284	.0	RE	C1.570	T1.930	99.0200
N003 817 V069 U028	90710001			.0	OR	C1.350	T11.000	98.9500
N003 817 V069 U029	90804001			.0	OR	C11.130	T11.030	98.9100
N003 817 V069 U030	90825003			.0	OR	C1.290	T1.810	99.0400
N003 817 V069 U031	90908001			.0	OR	C1.330	T1.960	98.9900
N003 817 V069 U032	90928002			.0	OR	C11.460	T11.000	98.9400
N003 817 V069 U034	91116001			.0	OR	C11.300	T1.960	98.9800
N003 817 V069 U035	91205001			.0	OR	C1.740	T1.920	99.0300
N003 817 V069 U036	00103001			.0	OR	C11.910	M	M

********** END-OF-REPORT **********

673

01/15/90

ACTIVITY D[illegible] 01/01/87 thru 01/10/90

RESIDUES SPEC[illegible] PORT REQUES[illegible]

METHOD CODES - %U

A - VOLUMETRIC
B - GRAVIMETRIC
C - COLORIMETRIC
E - VOLUMETRIC
F - FACTOR ASSAY
* - TWO OR MORE

U-235

R - GAMMA
S - GAS MASS SPEC
T - THERMAL MASS SPEC

TRANSURANICS

A - URANIUM
B - SAMPLE
C - U-235
D - ANU

LOT IDENTIFICATION	LAB NO	BCON	NET WT SE		%U	U-235	U-238
D690 510 D034 A314	80315004	28	21426.0	OR	C)1.95	T)203	
D690 510 D034 A315	80415032	21	15707.0	OR	*)1.84	T)203	
H093 510 D034 A309	71013054	38	28649.0	OR	C)1.79	2070	
H093 510 D034 A310	71124051	25	19346.0	OR	C)2.20	T)2050	
H093 510 D034 A311	71216030	28	19675.0	OR	C)1.54	T)2040	
S057 510 D034 A308	71021074	10	6757.0	OR	C)1.97	T)5680	
S060 510 D034 A310	71116124	5	2919.0	OR	C)1.79	T)6050	
S062 510 D034 A311	80106045	18	12415.0	OR	C)1.81	T)621	
E060 510 D034 A307	71023036	8	3646.0	OR	C)1.42	T)6820	
D690 513 D034 A312	71229050	41	13190.0	OR	C)1.75	T)200	
D690 513 D034 A313	80310102	41	14029.0	OR	C)2.02	T)239	
D690 513 D034 A314	80227042	41	14143.0	OR	C)2.39	T)211	
D690 513 D034 A315	80330060	41	14519.0	OR	C)2.38	T)204	
D690 513 D034 B312	80112051	27	9002.0	OR	C)2.05	T)233	
D690 513 D034 B313	80220082	33	11586.0	OR	C)2.18	T)208	
D690 513 D034 B314	80315003	25	7953.0	OR	C)2.63	R)34	
D690 513 D034 B315	80411021	13	3838.0	OR	C)2.88	T)205	
H093 513 D034 A310	71110059	40	13949.0	OR	C)2.49	T)2120	
H093 513 D034 A311	71216031	41	13517.0	OR	C)1.68	T)2070	
H093 513 D034 B309	71013064	12	3907.0	OR	C)1.65	T)215	
H093 513 D034 B309	71011013	32	9739.0	OR	C)2.09	T)214	
H093 513 D034 B310	71119032	15	4719.0	OR	C)1.81	T)2050	
H093 513 D034 B311	71216032	9	2614.0	OR	C)1.85	T)2060	
S044 513 D034 A307	71016066	15	5033.0	OR	C)2.68	T)4430	
S055 513 D034 A311	80106046	16	5717.0	OR	C)2.14	T)554	
S057 513 D034 B297	71116126	36	10468.0	OR	C)2.77	T)5730	
H003 822 D034 W001	90321002			OR	C)2.27	T)204	99.7900
H003 822 D034 W002	90322001			OR	C)1.25	T)202	99.8000
H003 822 D034 W003	80323016			OR	C)2.48	T)206	99.7900
H003 822 D034 W004	80326001			OR	C)3.49	T)261	99.7300
H003 822 D034 W005	80421002			OR	C)2.45	T)214	99.7800
H003 822 D034 W006	80423009			OR	C)2.80	T)210	99.7860
H003 822 D034 W007	80425001			OR	C)2.25	T)215	99.7200
H003 822 D034 W008	80509026			OR	C)1.91	T)242	99.7500
H003 822 D034 W009	80502023			OR	C)2.25	T)330	99.6500
H003 822 D034 W010	80502024			OR	C)2.73	T)250	99.7400
H003 822 D034 W011	80504014			OR	C)2.49	T)263	99.7300
H003 822 D034 W012	80506053			OR	C)2.47	T)205	99.7900
H003 822 D034 W013	80529024			OR	C)1.85	T)277	99.7100
H003 822 D034 W014	80511033			OR	C)1.80	T)294	99.7100
H003 822 D034 W015	80512049			OR	C)1.73	T)293	99.7000
H003 822 D034 W016	80516023			OR	C)2.15	T)405	99.5800
H003 822 D034 W017	80518024			OR	C)1.82	T)218	99.7800
H003 822 D034 W018	80520017			OR	C)2.26	T)205	99.7900
H003 822 D034 W019	80523001			OR	C)1.69	T)224	99.7700
H003 822 D034 W020	80525002			OR	C)3.36	T)214	99.7800
[illegible]	[illegible]			OR	C)1.75	T)393	99.6000
[illegible]	[illegible]			OR	[illegible]	T)218	99.7800

3511

METHOD CODES: ZU

A - VOLUMETRIC
B - GRAVIMETRIC
C - COLORIMETRIC
E - VOLUMETRIC
E - FACTOR ASSAY
* - TWO OR MORE

U-235

R - GAMMA
S - GAS MASS SPEC.
T - THERMAL MASS SPEC.

TRANSURANICS

A - URANIUM
B - SAMPLE
C - U-235
D - ANU

OT	IDENTIFICATION	LAB NO	NCON	NET WT	SE	ZU	U-235	U-238
1003	822	D034	W023	80531001		0 OR C12.43	T1.288	99.7000
1003	822	D034	W024	90602001		0 OR C11.86	T1.239	99.7500
1003	822	D034	W025	80604106		0 OR C11.83	T1.254	99.7400
1003	822	D034	W026	80624002		0 OR C11.940	T1.386	99.5900
1003	822	D034	W027	80721003		0 OR C12.800	T1.208	99.8000
1003	822	D034	W028	80702005		0 OR C11.760	T1.504	99.3900
1003	822	D034	W029	80622012		0 OR C12.800	T1.210	99.7900
[illegible]								
1093.518		D057	A309	71017051		0 OR C11.57	T1.2010	
1093 518		D057	0313	80226023	6	3303.0 OR A15.32	R1.20	
1093 518		D057	0299	71202050	5	2223.0 OR C13.18	R1.26	
1093 518		D057	0309	71019050	2	1300.0 OR C13.24	T1.2040	
1093.518		D057	0309	71222003		0 OR A13.97	R1.20	
1082 660		D061	0236	71208062	4	804.0 OR A146.72	R1.21	
1082.660		D061	0237	71204062	2	250.0 OR A157.70	R1.20	
1082 660		D061	0238	71208063	3	865.0 OR A156.24	R1.21	
1082 660		D061	0300	71208064	5	1066.0 OR A137.42	R1.20	
1082 660		D061	0301	71208065	13	2609.0 OR A149.97	R1.20	
1082 660		D061	0302	71210043	8	1601.0 OR A140.36	R1.21	
1082 660		D061	0303	71223001	7	1604.0 OR A143.39	R1.20	
1082 660		D061	0304	71210045	6	1292.0 OR A144.28	R1.20	
1082 660		D	0305	71210044	5	1195.0 OR A139.43	R1.20	
1082 660			0306	71204063	3	431.0 OR A150.33	R1	
1082 660			0307	71210046	3	532.0 OR A150.33	R1	

M

ACTIVITY

METHOD CODE

A - VOLUMETRIC
B - GRAVIMETRIC
C - COLORIMETRIC

E - VOLUMETRIC
F - FACTOR ASSAY
* - TWO OR MORE

U-235
R - GAMMA
S - GAS MASS SPEC.
T - THERMAL MASS SPEC

TRANSURANICS
A - URANIUM
B - SAMPLE
C - U-235
D - AMU

LOT IDENTIFICATION	LAB NO.	#CON	NET WT GE		%U	U-235	U-238
0690 913 D061 0310 80110053	13		6126.0	OR	A120.66	R1.20	
0690 913 D061 0313 80210033	27		9267.0	OR	A155.30	R1.20	
0690 913 D061 0314 80314046	13		4541.0	OR	A144.46	R1.20	
0690 913 D061 0315 80414005	23		7409.0	OR	A12.68	B1.2051	
0690 913 D061 0316 90411008	16		5418.0	OR	A134.800	R1.20	
0690 913 D061 0317 90411009	13		5319.0	OR	A129.580	R1.20	
0690 913 D061 0318 90411010	80		7188.0	OR	A132.860	R1.20	
0690 913 D061 0319 90411011	3		827.0	OR	A125.620	R1.20	
1008 913 D061 0309 71107014	87		7496.0	OR	A145.06	R1.2000	
1082 913 D061 0310 71112052	25		7594.0	OR	A126.38	R1.2000	
1082 913 D061 0311 71223008	83		8027.0	OR	A145.27	R1.20	
1082 913 D061 A304 71014001	10		4026.0	RE	A133.49		
1040 108 D062 0310 71108055	3		174.0	OR	A136.36	R1.2600	
1070 117 D062 0315 90315046	3		98.0	OR	*18.62	R1.70	
1120 313 D062 0312 80115052	2		151.0	OR	A175.66	R1.34	
1120 314 D062 0308 71001001			0	OR	A174.37	R1.25	
1120 314 D062 0309 71013071			0	OR	A173.12	T1.328	
1120 314 D062 0311 71216035	3		1076.0	OR	A174.63	R1.2500	
1120 314 D062 0312 80115053	3		533.0	OR	A170.78	R1.24	
1120 314 D062 0313 80224043	3		296.0	OR	A174.46	R1.23	
1120 314 D062 0314 80315007	2		787.0	OR	A173.45	R1.22	
1120 314 D062 0315 80407040	2		399.0	OR	A172.17	R1.23	
1120 314 D062 0318 90919005	2		1318.0	OR	A175.520	M	M
1120 314 D062 0319 90919006	4		963.0	OR	A175.170	M	M
1120 314 D062 0320 90919007	2		806.0	OR	A175.760	M	M
1120 314 D062 0321 90919008	1		930.0	OR	A175.540	M	M
1093 332 D062 0322 81002004	8		837.0	OR	C11.790	T1.260	99.7300
1093 333 D062 0309 71013074			0	OR	*11.53	.2000	
1093 333 D062 0310 71112053	7		3125.0	OR	A11.48	T1.2010	
1093 333 D062 0311 71216037	6		2493.0	OR	*12.56	R1.3200	
1093 333 D062 0312 80115056	6		2710.0	OR	C1.91	T1.202	
1093 333 D062 0313 80224041	9		4188.0	OR	*11.29	T1.202	
1093 333 D062 0314 80315009	11		5838.0	OR	C1.92	T1.201	
1093 333 D062 0315 80407045	11		4533.0	OR	A11.56	R1.27	
1093 333 D062 0316 90830001	3		1764.0	OR	C1.900	T1.230	99.7700
1093 333 D062 0317 90830002	8		4432.0	OR	C14.440	T1.220	99.7800
1093 333 D062 0318 90830003	5		2677.0	OR	C11.330	T1.200	99.7900
1093 333 D062 0319 90830004	2		1008.0	OR	C11.710	T1.200	99.7900
1093 333 D062 0320 90830005	3		1305.0	OR	C11.310	T1.210	99.7800
1093 333 D062 0321 90830006	4		1563.0	OR	C1.920	T1.200	99.7900
1093 333 D062 0326 90831001	6		3051.0	OR	C11.270	T1.290	99.7100
1093 333 D062 0327 90831002	4		2076.0	OR	C11.970	T1.230	99.7600
1093 333 D062 0328 90831003	1		559.0	OR	C11.490	T1.210	99.7900
1093 333 D062 0329 90831004	3		1311.0	OR	C11.740	T1.200	99.8000
1093 333 D062 0330 90831005	3		1491.0	OR	C11.340	T1.200	99.7900
1093 333 D062 0332 91012003	2		300.0	OR	A16.710	T1.210	99.7900
1093 346 D062 0309 71013069			.0	OR	C1.18	.3900	
1093 346 D062 0313 80227046	2		426.0	OR	C1.26	T1.599	

949

3511

METHOD CODES: ZU		U-235	TRANSURANICS
A - VOLUMETRIC	E - VOLUMETRIC	R - GAMMA	A - URANIUM
B - GRAVIMETRIC	F - FACTOR ASSAY	S - GAS MASS SPEC.	B - SAMPLE
C - COLORIMETRIC	* - TWO OR MORE	T - THERMAL MASS SPEC.	C - U-235
			D - ANU

T	IDENTIFICATION	LAB NO	NCON	NET WT	SE	ZU	U-235	U-238
93	346	D062 0315	80401047	2	427.0	OR	C1.16	T1.480
93	346	D062 0317	91002001	1	287.0	OR	C1.300	T1.410	99.5900
93	346	D062 0319	91002002	1	447.0	OR	C12.810	T1.210	99.7800
93	346	D062 0321	91002003	1	176.0	OR	C1.310	T1.340	99.6600
93	346	D062 0330	91002006	1	343.0	OR	C1.420	T1.510	99.4900
93	347	D062 0309	71013073		0	OR	A120.23	R1.20
93	347	D062 0310	71112055	2	299.0	OR	A15.40	T1.3490
93	347	D062 0315	80409120	2	402.0	OR	A19.38	R1.22
93	347	D062 0329	91002005	1	287.0	OR	A14.740	T1.330	99.6700
90	512	D062 A312	80112050	30	14309.0	OR	A127.70	R1.20
90	512	D062 A313	80224040	28	13282.0	OR	A134.62	R1.20
90	512	D062 A314	80315008	27	12560.0	OR	A125.45	R1.21
90	512	D062 A315	80411020	26	12239.0	OR	A124.48	R1.20
93	512	D062 A304	71020137		0	OR	A138.02	R1.20
93	512	D062 A309	71004001		0	OR	A157.92	R1.20
93	512	D062 A310	71119031	33	16552.0	OR	A145.19	R1.2000
93	512	D062 A311	71216034	33	16662.0	OR	A131.37	R1.2000
93	512	D062 B309	71013069		0	OR	A116.96	R1.21
54	512	D062 A297	71118040	5	1644.0	OR	A135.98	R1.5400
69	512	D062 0296	71113053	3	765.0	OR	A145.13	R1.6900
21	512	D062 A299	71002001		0	OR	A137.79	R1.71
90	519	D062 A312	71229051	41	12391.0	OR	C12.06	R1.34
90	519	D062 A313	80210103	41	13266.0	OR	C13.11	R1.26
90	519	D062 A314	80224030	41	13147.0	OR	C13.11	T1.203
90	519	D062 A315	80330061	41	12604.0	OR	C13.50	R1.25
90	519	D062 A316	80426073	41	12725.0	OR	A13.27	T1.203
90	519	D062 B312	80111083	41	13045.0	OR	C12.70	T1.210
90	519	D062 B313	80220081	41	12782.0	OR	C12.95	R1.24
90	519	D062 B314	80315001	41	13747.0	OR	C13.49	R1.26
90	519	D062 B315	80411022	26	8203.0	OR	C13.50	R1.30
90	519	D062 C312	80111004	11	2949.0	OR	C12.99	T1.200
90	519	D062 C313	80227043	6	1521.0	OR	C13.26	R1.23
90	519	D062 C314	80315002	10	2880.0	OR	C13.66	R1.39
93	519	D062 A310	71110056	41	12726.0	OR	C13.04	R1.2000
93	519	D062 A311	71124052	41	12604.0	OR	C12.95	R1.4100
93	519	D062 B309	71004004		0	OR	C12.67	T1.209
93	519	D062 B310	71110057	41	12585.0	OR	C13.10	R1.2500
93	519	D062 B311	71223003	41	13104.0	OR	C12.95	T1.211
93	519	D062 C309	71010002		0	OR	A16.37	R1.22
93	519	D062 C310	71119033	11	3207.0	OR	C13.32	R1.6000
93	519	D062 C311	80111005	4	767.0	OR	C13.95	R1.26
90	520	D062 A312	80112052	9	2944.0	OR	C12.67	R1.37
90	520	D062 A313	80227044	2	396.0	OR	C12.44	T1.259
90	520	D062 A315	80411023	18	6397.0	OR	C13.10	R1.30
93	520	D062 A307	71019045	4	183.0	OR	A111.31	R1.60
93	520	D062 A310	71119034	3	952.0	OR	C12.64	T1.450
93	520	D062 [illegible]	[illegible]	11	3554.0	OR	C12.21	T1.299

CRIVITY - 7/01/87 thru 01/10/90

METHOD CODES

A - VOLUMETRIC
B - GRAVIMETRIC
C - COLORIMETRIC
E - VOLUMETRIC
F - FACTOR ASSAY
* - TWO OR MORE

U-235
R - GAMMA
S - GAS MASS SPEC
T - THERMAL MASS SPEC

TRANSURANICS
A - URANIUM
B - SAMPLE
C - U-235
D - ANU

DT	IDENTIFICATION	LAB NO.	SCON	NET WT SE		%U	U-235	U-238
050	520	D062	A297	71118041	10	2664.0	OR	C10.42	T1.4980	
055	520	D062	A307	71023036	13	3131.0	OR	C12.23	T1.5520	
056	520	D062	A313	80210105	6	1860.0	OR	C12.96	R1.56	
062	520	D062	A299	71206008	14	4522.0	OR	C12.28	T1.6190	
066	520	D062	A311	80106047	18	6289.0	OR	C13.73	T1.657	
066	520	D062	A312	80114090	9	3027.0	OR	C12.14	T1.660	
068	520	D062	A298	71002003		0	OR	C12.22	T1.676	
069	520	D062	A308	71016064		0	OR	C12.74	T1.6870	
140	520	D062	A314	80315045	16	5036.0	OR	C12.96	R1.55	
140	520	D062	A315	80330062	7	1707.0	OR	*14.07	R1.54	
190	523	D062	A312	80111006	3	660.0	OR	*12.40	T1.209	
190	523	D062	A313	80227045	3	1545.0	OR	*12.52	R1.22	
190	523	D062	A314	80314044	2	738.0	OR	C12.89	R1.2065	
190	523	D062	A315	80415033	5	2045.0	OR	*13.00	R1.26	
193	523	D062	A307	71013065		0	OR	C11.13	T1.201	
193	523	D062	A308	71013066		0	OR	*11.01	T1.210	
193	523	D062	A309	71013067		0	OR	*12.32	R1.51	
193	523	D062	A310	71119035	2	667.0	OR	*11.85	T1.2250	
193	523	D062	A311	80115055	3	1584.0	OR	*12.30	R1.21	
197	523	D062	0296	71118042	2	818.0	OR	*13.86	T1.4700	
029	524	D062	A310	71118044	4	1416.0	OR	A118.00	R1.2900	
003	822	D062	W001	80902001		0	OR	C12.480	T1.210	99.7900
003	822	D062	W002	80906036		0	OR	C12.930	T1.213	99.7830
003	822	D062	W003	90124001		0	OR	C13.440	T1.206	99.7890
003	822	D062	W004	90214056		0	OR	C12.080	T1.200	99.8000
003	822	D062	W005	90202001		0	OR	C12.230	T1.203	99.7700
003	822	D062	W006	90206001		0	OR	C13.380	T1.216	99.7800
003	822	D062	W007	90216054		0	OR	C12.160	T1.200	99.8000
003	822	D062	W008	90328005		0	OR	C19.740	T1.253	99.7400
093	100	D065	0313	81130001	40	13228.0	OR	M	R1.28	
093	100	D065	0314	81130002	8	2814.0	OR	M	R1.29	
020	310	D065	0309	71013070		0	OR	A174.92	R1.25	
020	314	D065	0310	80115064	2	205.0	OR	A169.49	R1.24	
020	314	D065	0313	80224042	2	90.0	OR	A171.78	R1.21	
020	314	D065	0316	90919009	1	262.0	OR	A174.600	M	M
020	314	D065	0317	90919010	1	386.0	OR	A171.920	M	M
082	400	D065	A308	71029042		0	OR	A176.04	R1.2100	
092	400	D065	A309	71208067	44	41477.0	OR	B175.40	R1.20	
092	400	D065	A312	80203036	44	36281.0	OR	A175.90	R1.20	
092	400	D065	A315	80411024	14	12479.0	OR	B175.67	R1.20	99.8000
094	400	D065	A317	81013001	12	12417.0	OR	B175.760	T1.145	99.8510
096	400	D065	A318	80531011	29	24002.0	OR	B175.80	R1.15	
082	420	D065	0310	71112051	2	417.0	OR	A175.22	R1.2000	
082	429	D065	0307	71019041	2	356.0	OR	A173.34	R1.19	
082	429	D065	0308	71019048	3	834.0	OR	A174.46	R1.21	
082	429	D065	0309	71117041	2	350.0	OR	A174.09	R1.2200	
[illegible]	[illegible]	[illegible]	[illegible]	71117054	2	365.0	OR	A167.20	R1.3600	

3511

METHOD CODES: XU		U-235	TRANSURANICS
A - VOLUMETRIC	E - VOLUMETRIC	R - GAMMA	A - URANIUM
B - GRAVIMETRIC	F - FACTOR ASSAY	S - GAS MASS SPEC.	B - SAMPLE
C - COLORIMETRIC	* - TWO OR MORE	T - THERMAL MASS SPEC.	C - U-235
			D - ANU

OT	IDENTIFICATION	LAB NO	ACON	NET WT	SE	XU	U-235	U-238
1082	429 D065	0312 80112049	2	515.0	OR	A172.83	R1.30	
1082	429 D065	0313 80321040	4	1040.0	OR	A172.44	R1.21	
1082	429 D065	0314 80321041	3	642.0	OR	A172.86	R1.67	
1082	429 D065	0315 80407046	2	694.0	OR	A165.94	R1.22	
093	530 D065	0296 71210049	2	906.0	OR	A114.34	R1.27	
093	530 D065	0297 71204059	4	1256.0	OR	A13.05	R1.30	
093	530 D065	0301 71210050	4	1282.0	OR	A121.73	R1.21	
093	530 D065	0303 71204060	3	363.0	OR	A111.53	R1.21	
093	530 D065	0305 71204061	2	190.0	OR	A1.89	T1.250	
003	822 D065	W023 80808006		0	OR	B175.750	T1.217	99.7790
003	822 D065	W027 80107047		0	OR	B175.70	T1.296	99.7080
003	822 D065	W028 80107048		0	OR	B175.83	T1.448	99.5300
003	822 D065	W029 80107049		0	OR	B175.90	T1.510	99.4700
003	822 D065	W030 80701003		0	OR	B175.580	T1.225	99.7700
003	822 D065	W033 80816002		0	OR	C13.390	T1.664	99.3300
003	822 D065	W034 80819001		0	OR	C13.330	T1.261	99.7320
003	822 D065	W035 80929001		0	OR	B175.620	T1.200	99.7950
026	610 D066	0303 71116002	2	287.0	OR	A132.66	T1.2600	
017	ETA D068	2027 90417004	5	1570.0	OR	A169.55	R1.30	
019	ETA D068	7066 90314045	3	1019.0	OR	A118.460	R1.28	
020	ETA D068	7053 90411017	6	1496.0	OR	A11.200	T1.320	
021	ETA D068	7054 90412020	3	491.0	OR	A161.310	R1.21	
021	ETA D068	2083 90411019	2	580.0	OR	A153.370	R1.28	
022	ETA D068	7091 90320007	6	1709.0	OR	A12.720	T1.391	99.5930
022	ETA D068	2091 90717015	6	1709.0	RE	A11.010	T1.233	99.7600
023	ETA D068	7070 90410039	6	1631.0	OR	A10.630	R1.27	
025	ETA D068	2062 90317002	8	1244.0	OR	A1.580	T1.280	
026	ETA D068	7063 90317003	4	725.0	OR	A19.530	R1.27	
026	ETA D068	2098 90317004	1	724.0	OR	A14.390	R1.61	
028	ETA D068	7080 90320005		0	OR	A1.310	T1.730	99.2600
028	ETA D068	7084 90320006	6	1029.0	OR	A113.560	R1.28	99.7200
029	ETA D068	7109 90403002	4	1331.0	OR	A10.510	R1.31	
030	ETA D068	2086 90410038	3	3681.0	OR	A110.040	R1.28	
30	ETA D068	7100 90411016	1	338.0	OR	A110.660	R1.30	
31	ETA D068	2092 90315076	1	345.0	OR	A17.350	R1.34	
32	ETA D068	7064 90317006	5	1183.0	OR	A111.230	R1.23	
35	ETA D068	2102 90318077	1	125.0	OR	A15.390	R1.35	
35	ETA D068	7104 90331003	4	1305.0	OR	A11.110	T1.510	
36	ETA D068	2096 90315078	2	5700.0	OR	A15.080	R1.52	
37	ETA D068	7095 90315079	3	1083.0	OR	A115.990	R1.40	
38	ETA D068	2072 90314047	6	2600.0	OR	A12.020	T1.322	
38	ETA D069	7074 90317007	7	1596.0	OR	C1.100	T1.360	
39	ETA D068	2089 90410041	7	2377.0	OR	A1.540	T1.390	
39	ETA D069	7101 90315081	1	361.0	OR	A1.310	T1.560	
41	ETA D	2099 90120056	4	1330.0	OR	A1.540	T1.468	99.5530
43	ETA D	7068 90317008	8	1609.0	OR	C1.610	T1.47	
44	ETA D	2106 90331005			OR	A1.660	T1.[illegible]	
					OR	C1.680	T1.46	

/15/90
ITIVITY 11/87 thru 01/10/90

THOD CODES:

A - VOLUMETRIC
B - GRAVIMETRIC
C - COLORIMETRIC

E - VOLUMETRIC
F - FACTOR ASSAY
* - TWO OR MORE

U-235
R - GAMMA
S - GAS MASS SPEC.
T - THERMAL MASS SPEC.

TRANSURANICS
A - URANIUM
B - SAMPLE
C - U-235
D - ANU

T	IDENTIFICATION	LAB NO.	SCON	NET WT SE		XU	U-235	U-238
93	658 D069 0309	71124059	58	23818.0	OR	A129.28	R1.2000	
93	658 D069 0310	71204069	39	16796.0	OR	A120.49	R1.21	
93	658 D069 0311	71210053	37	14689.0	OR	A136.15	R1.20	
93	658 D069 0312	80112046	39	17351.0	OR	A127.06	R1.20	
82	732 D069 0318	80120042		0	OR			
90	965 D069 0247	71222004	22	7727.0	OR	A18.72	R1.20	
90	965 D069 0248	80112044	22	7310.0	OR	A114.24	R1.20	
90	965 D069 0249	80112045	22	7764.0	OR	A14.54	R1.20	
90	965 D069 0250	80121028	22	8107.0	OR	A125.39	R1.20	
90	965 D069 0251	80210004	22	7917.0	OR	A114.50	R1.20	
90	965 D069 0253	80225071	22	8070.0	OR	A118.34	R1.20	
90	965 D069 0254	80314042	22	8338.0	OR	A112.39	R1.20	
90	965 D069 0255	80407044	22	8210.0	OR	A112.98	R1.20	
90	965 D069 0256	80414004	22	8447.0	OR	A17.30	R1.20	
90	965 D069 0257	80504024	22	8217.0	OR	A19.63	R1.20	
90	965 D069 0258	90411012	21	8286.0	OR	A116.020	R1.20	
90	965 D069 0259	90411013	21	7612.0	OR	A114.440	R1.21	
90	965 D069 0260	90411014	21	8143.0	OR	A111.310	R1.20	
90	965 D069 0261	90411015	21	7418.0	OR	A19.840	R1.21	
82	965 D069 0241	71109048	22	7456.0	OR	A113.45	R1.20	
82	965 D069 0242	71109049	22	8401.0	OR	A120.24	R1.2300	
82	965 D069 0243	71109050	22	8329.0	OR	A117.66	R1.2100	
82	965 D069 0244	71208068	22	7843.0	OR	A116.87	R1.20	
82	965 D069 0245	71208069	22	7451.0	OR	A17.36	R1.20	
82	965 D069 0246	71222002	15	5021.0	OR	C1.83	T1.226	
20	965 D069 0252	80209006	15	4793.0	OR	A115.82	R1.20	
65	965 D069 0240	80121031	16	4931.0	OR	C11.91	T1.649	
20	FTA D069 1229	80112031	2	0	OR	A117.36	R1.34	
20	FTA D069 1230	80402032	2	0	OR	A119.34	R1.34	
20	FTA D069 7052	90331001	9	1801.0	OR	A121.710	R1.19	
20	FTA D069 7065	90314048	4	791.0	OR	A119.140	R1.19	
22	FTA D069 7073	90320054	2	295.0	OR	A18.170	T1.243	99.7490
25	FTA D069 7061	90320059		0	OR	A113.030	T1.241	99.7510
26	FTA D069 7061	90717014	5	1229.0	OR	A118.920	T1.277	99.7200
33	FTA D069 7077	90314052	11	6899.0	OR	A1.260	T1.290	
40	FTA D069 7067	90314050	1	41.0	OR	A110.610	R1.41	
47	FTA D069 7078	90328004	14	8501.0	OR	C1.010	T1.280	
52	FTA D069 7073	90314046	6	3936.0	OR	A11.310	T1.391	
57	FTA D069 7097	90315080		0	OR	A1.130	T1.980	
59	FTA D069 7030	80702001	4	350.0	OR	A15.010	T1.660	
6[illegible]	FTA D069 7090	90328001		0	OR	C1.180	T1.830	
8	FTA D069 1236	80407042	2	0	OR	A120.32	R1.41	
18	FTA D069 1326	90717011		0	OR	A1.110	T1.870	99.0800
10	516 D071 0312	80111001	4	2040.0	OR	A150.35	R1.20	
10	516 D071 0313	80226022	2	509.0	OR	A154.46	R1.20	
10	516 D071 0315	80415026	5	2749.0	OR	A12.18	T1.580	
10	516 D071 [illegible]	[illegible]	[illegible]	1971.0	OR	A121.93	R1.26	

680

3511

1/15/9

CTIVITY DATE 10/01/87 thru 01/10/90

METHOD CODES: XU

A - VOLUMETRIC
B - GRAVIMETRIC
C - COLORIMETRIC

E - VOLUMETRIC
E - FACTOR ASSAY
* - TWO OR MORE

U-235

R - GAMMA
S - GAS MASS SPEC.
T - THERMAL MASS SPEC.

TRANSURANICS

A - URANIUM
B - SAMPLE
C - U-235
D - ANU

OT	IDENTIFICATION	LAB NO	#CON	NET WT	SE	XU	U-235	U-238
1093	516	D071 0300	71204058	2	134.0 OR	A1.26	T1.357	
1093	516	D071 0301	71010005		.0 OR	A126.73	R1.23	
1093	516	D071 0303	71018002		.0 OR	A128.93	R1.2000	
1093	516	D071 0304	71013054		.0 OR	A18.38	R1.4000	
1093	516	D071 0305	71017052		.0 OR	A125.36	R1.2000	
1093	516	D071 0308	71017053		.0 OR	A145.42	R1.2000	
1093	516	D071 0309	71013055		.0 OR	A127.56	R1.3300	
1093	516	D071 0310	71119017	5	1963.0 OR	A139.20	R1.21	
1093	516	D071 0311	71216020	3	1324.0 OR	A137.34	R1.20	
1093	516	D071 A299	71210051	6	2220.0 OR	A111.79	R1.28	
1082	913	D071 0297	71109056	2	85.0 OR	A1.60	T1.2100	
1690	518	D077 0313	80226024	11	5841.0 OR	A119.94	R1.2[illegible]	
1093	518	D077 0299	71124010	17	12088.0 OR	C13.76	R1.2100	
1093	518	D077 0300	71204064	3	1179.0 OR	A14.75	T1.207	
1093	518	D077 0302	71017049		.0 OR	A16.88	R1.2000	
1093	518	D077 0307	71017050		.0 OR	C13.09	T1.2070	
1093	518	D077 0310	71119018	18	10985.0 OR	A12.[illegible]	T1.204	
1093	518	D077 A308	71011014		.0 OR	*1[illegible].03	R1.22	
1093	518	D077 A308	71109053	4	2275.0 OR	C[illegible]1.96	T1.7070	
1690	514	D079 A312	80111002	17	17494.0 OR	A138.66	R1.20	
1690	514	D079 A312	80323023	17	17494.0 RE	A143.08	R1.20	
1690	514	D079 A313	80227047	18	20052.0 OR	A154.55	R1.20	
1690	514	D079 A314	80115006	13	13432.0 OR	A149.18	R1.20	
1690	514	D079 A315	80401121	10	9893.0 OR	A148.70	R1.19	
1082	514	D079 A304	71011011		.0 OR	A137.23	R1.20	
1082	514	D079 A308	71011012		.0 OR	A148.65	R1.19	
1093	514	D079 A296	71124003	29	32256.0 OR	A147.31	R1.2000	
1093	514	D079 A297	71202055	[illegible]	41636.0 OR	A161.84	R1.2200	
1093	514	D079 A298	71124004	41	48864.0 OR	A148.51	R1.2000	
1093	514	D079 A299	71206003	27	36437.0 OR	A152.81	R1.3200	
1093	514	D079 A300	71124005	41	46[illegible].0 OR	A154.63	R1.2100	
1093	514	D079 A301	71120001	41	4530[illegible].0 OR	A156.72	R1.2000	
1093	514	D079 A302	71004002		.0 OR	A152.63	R1.20	
1093	514	D079 A305	71004003		.0 OR	A151.77	R1.20	
1093	514	D079 A307	71017055		.0 OR	A152.87	R1.19	
1093	514	D079 A309	71018001		.0 OR	A152.22	R1.20	
1093	514	D079 A310	71124006	18	17255.0 OR	A[illegible]7.30	R1.2000	
1093	514	D079 A311	71216036	15	15000.0 OR	A146.41	R1.2000	
1093	514	D079 B292	71202056	9	5791.0 OR	A147.[illegible]	R1.2000	
1093	514	D079 B298	71124007	7	5984.0 OR	A134.80	R1.2000	
1093	514	D079 B301	71022038	31	31214.0 OR	A148.22	R1.2000	
048	514	D079 0297	71112057	4	1267.0 OR	A155.80	R1.4800	
0[illegible]	514	[illegible] 0296	71112056	7	6563.0 OR	A137.91	R1.6[illegible]0	
070	514	[illegible] A299	71112058	3	1543.0 OR	A111.66	R1.70[illegible]	
082	440	[illegible] 1309	71019046	2	1346.0 OR	A174.14	R[illegible]	
					0 OR	A175.02	R1	

3311

631

(87)

METHOD CODES

B - VOLUMETRIC
D - GRAVIMETRIC
C - COLORIMETRIC
E - VOLUMETRIC
F - FACTOR ASSAY
* - TWO OR MORE

U-235
R - GAMMA
S - GAS MASS SPEC.
T - THERMAL MASS SPEC.

TRANSURANICS
A - URANIUM
B - SAMPLE
C - U-235
D - ANU

OT	IDENTIFICATION	LAB NO.	SCDN	NET	UT	SE	XU	U-235	U-238
082	440-D082-5734	71011002			0	OR	B175.79	R1.24	
082	440 D082 5735	71007063			0	OR	A175.96	R1.20	
082	440-D082-5773	71011003			0	OR	B175.74	R1.20	
082	440 D082 5932	71011016			0	OR	B175.74	R1.20	
082	440-D082-5935	71011004			0	OR	B175.77	R1.20	
082	440 D082 6129	71011005			0	OR	B175.77	R1.20	
082	440-D082-6132	71011006			0	OR	B175.54	R1.20	
082	440 D082 6160	71007061			0	OR	A175.56	R1.19	
082	440-D082-6161	71011015			0	OR	B175.69	R1.20	
082	440 D082 6203	71007065			0	OR	A175.52	R1.20	
082	440-D082 6215	71007062			0	OR	A175.88	R1.20	
082	440 D082 6233	71008058			0	OR	A172.45	R1.20	
082	440 D082 6240	71008059			0	OR	A171.84	R1.19	
082	440 D082 6243	71008060			0	OR	A171.41	R1.20	
16	440-D082-5310	71008055			0	OR	A175.84	R1.14	
16	440 D082 5311	71008056			0	OR	A175.49	R1.15	
16	440-D082 5371	71008057			0	OR	A175.82	R1.15	
24	440 D082 5921	71013072			0	OR	A175.70	R1.25	
24	440-D082-5944	71011009			0	OR	B175.79	R1.24	
24	440 D082 5974	71011010			0	OR	B175.79	R1.24	
~~[illegible]~~	~~[illegible]~~	~~[illegible]~~			~~0~~	~~OR~~	~~[illegible]~~	~~[illegible]~~	
~~[illegible]~~	~~[illegible]~~	~~[illegible]~~			~~0~~	~~OR~~	~~[illegible]~~	~~[illegible]~~	
~~[illegible]~~	~~[illegible]~~	~~[illegible]~~			~~0~~	~~OR~~	~~[illegible]~~	~~[illegible]~~	
~~[illegible]~~	~~[illegible]~~	~~[illegible]~~			~~0~~	~~OR~~	~~[illegible]~~	~~[illegible]~~	
90	534-D101-A318	80423010	13	5809.0	OR		A131.27	R1.20	
90	534 D101 A313	80423011	24	10287.0	OR		A181.52	R1.20	
90	534-D101-A314	80423012	9	3124.0	OR		A173.37	R1.20	
90	534 D101 A315	80423013	15	5663.0	OR		A157.52	R1.20	
93	534-D101-A304	71214024	6	2288.0	OR		A176.53	R1.2000	
93	534 D101 A305	71208066	29	12749.0	OR		A172.97	R1.20	
93	534-D101-A310	71204070	12	4959.0	OR		A180.82	R1.20	
93	534 D101 A311	80423015	18	8377.0	OR		A181.09	R1.20	
93	534-D101-H309	71110060			0	OR	A170.38	R1.2100	
10	FTA D101 7076	90314051	1	137	0	OR	A12.880	R1.31	
10	FTA D101 7085	90410040			0	OR	A1.560	T1.830	
11	FTA D101 7075	90317005			0	OR	C1.060	T11.120	
19	FTA D101 7069	90312009	2	456	0	OR	A1.620	T1.470	
13	FTA D101 7094	90320057	6	1243	0	OR	A15.000	T1.370	59.6200
7	FTA D101 7107	90403001	1	135	0	OR	C1.030	T1.630	
8	FTA D101 1301	90717012			0	OR	C1.020	T1.300	59.6900
8	FTA D101 1325	90717013			0	OR	A152.820	T1.240	51.7600
8	FTA D101 1390	91002009			0	OR	C1.050	M	M

END-OF-REPORT

FMPC LOT MARK	LAB CODE	UNITS	CONCENTRATION OF EP TOXICITY ELEMENTS FROM WMCO							
			As ARSENIC	Ba BARIUM	Cd CADMIUM	Cr CHROMIUM	Pb LEAD	Se SELENIUM	Ag SILVER	Hg MERCURY
N003-826-V002-W051	80203041	mg/l	0.039	2.03	<0.001	0.994	0.052	0.061	0.011	<0.100
N003-826-V002-W059	80322023	mg/l	0.055	2.46	0.001	2.06	0.046	0.208	0.010	<0.1
N082-400-D065-A315	80411024	mg/l	0.002	0.038	0.001	0.006	0.014	<0.001	0.001	<0.1
N003-822-D100-W003	80503021	mg/l	0.044	0.103	0.006	0.006	0.003	0.014	<0.001	<0.1
N093-530-D071-0311	12-0184	mg/l	0.007	0.108	<0.001	<0.001	<0.001	0.002	<0.001	<0.1
N003-811-V002-W061	80417038	mg/l	0.074	0.339	0.002	0.657	0.077	0.224	0.014	<0.1
N003-811-V002-W041	80307037	mg/l	0.043	6.41	<0.001	0.134	0.049	0.061	0.014	<0.1
N003-564-P034-0289	80307038	mg/l	0.006	0.066	<0.001	0.010	0.007	0.015	<0.001	<0.1
N003-564-P034-0309	80525068	mg/l	0.006	0.024	<0.001	0.010	0.007	0.014	<0.001	<0.1
N003-811-V002-W101	80808002	mg/l	0.030	5.54	0.004	0.081	<0.001	0.060	0.032	<0.100
N003-826-V002-W079	80707001	mg/l	0.010	0.725	0.004	0.007	0.011	0.031	<0.001	<0.100
N003-817-V069-W006	80808001	ug/l	11.6	1600	13.0	<40.0	8.9	89.7	3.9	<100
N003-817-V069-W007	80809001	ug/l	11.0	877	<10.0	<40.0	11.6	75.2	3.1	<100
N003-817-V069-W004	80802020	ug/l	12.2	1500	<10.0	<40.0	7.8	99.2	4.2	<100

FMPC LOT MARK	LAB CODE	UNITS	CONCENTRATI		EP TOXICITY ELEMENTS				FROM WHCO	
			As ARSENIC	Ba BARIUM	Cd CADMIUM	Cr CHROMIUM	Pb LEAD	Se SELENIUM	Ag SILVER	Hg MERCURY
N003-817-V069-W005	80802021	ug/l	12.2	629	<10.0	59.6	1.3	89.2	3.8	<100
N093-534-D101-A303	12-9611	mg/l	<1.0	<25			<1.0	<0.1	<1.0	
N082-913-D061-0303	12-9312	mg/l	<1.0	<25			<1.0	<0.1	<1.0	
N082-913-D061-0275	12-9313	mg/l	<1.0	<25			<1.0	<0.1	<1.0	
N082-917-D061-0275	12-9314	mg/l	<1.0	<25			<1.0	<0.1	<1.0	
N082-916-D061-0269	12-9315	mg/l	<1.0	<25			<1.0	<0.1	<1.0	
N093-530-D030-0272	12-9316	mg/l	<1.0	<25			<1.0	<0.1	<1.0	
X948-742-D042-0303	12-9317	mg/l	<1.0	<25			3.8	<0.1	<1.0	
N082-916-D061-0300	12-9318	mg/l	<1.0	<25			<1.0	<0.1	<1.0	
N082-913-D061-0299	12-9319	mg/l	<1.0	<25			<1.0	0.12	<1.0	
S059-FTA-D041-6651	12-9320	mg/l	<1.0	83			105	<0.1	<1.0	
S053-FTA-D069-6395	12-9321	mg/l	<1.0	<25			<1.0	<0.1	<1.0	
N120-310-D062-0295	12-9322	mg/l	<1.0	<25			<1.0	<0.1	<1.0	

FMPC LOT MARK	LAB CODE	UNITS	CONCENTRATION OF EP TOXICITY ELEMENTS FROM WMCO							
			As ARSENIC	Ba BARIUM	Cd CADMIUM	Cr CHROMIUM	Pb LEAD	Se SELENIUM	Ag SILVER	Hg MERCURY
N082-916-D061-0291	12-9323	mg/l	<1.0	<25			<1.0	0.18	<1.0	
N093-534-D101-A303	12-9311	mg/l	0.002	0.62			0.010	0.002	0.001	
N082-913-D061-0303	12-9312	mg/l	0.024	0.70			0.076	0.072	0.009	
N082-913-D061-0275	12-9313	mg/l	0.044	1.40			0.094	0.098	0.008	
N082-917-D061-0275	12-9314	mg/l	0.031	1.96			0.067	0.076	0.010	
N082-916-D061-0269	12-9315	mg/l	0.052	0.18			0.089	0.090	0.014	
N093-530-D030-0272	12-9316	mg/l	0.014	0.32			0.024	0.009	<0.001	
N948-742-D042-0303	12-9317	mg/l	0.037	4.96			3.84	0.022	0.003	
N082-916-D061-0300	12-9318	mg/l	0.058	0.06			0.095	0.092	0.018	
N082-913-D061-0299	12-9319	mg/l	0.051	0.74			0.089	0.125	0.014	
S059-FTA-D041-6651	12-9320	mg/l	0.013	82.6			105	0.018	<0.001	
S053-FTA-D069-6395	12-9321	mg/l	0.033	0.70			0.093	0.039	0.003	
N120-310-D062-0295	12-9322	mg/l	0.022	0.42			0.025	0.054	0.002	
N082-916-D061-0291	12-9323	mg/l	0.157	0.56			0.088	0.183	0.016	

C.LOT MARK	SAMPLE CODE	CONCENTRATION OF EP TOXICITY ELEMENTS IN mg/l (ppm)						FROM II CORP	
		ARSENIC	BARIUM	CADMIUM	CHROMIUM	LEAD	SELENIUM	SILVER	MERCURY
7-642-D041-0259	4-54	3.3	0.467	0.02	0.32	2.47	<0.2	1.13	<0.0002
3-643-D066-0282	1-55	0.8	0.602	0.053	0.11	0.54	<0.2	0.33	<0.0002
6-643-D044-0274	5-57	1.2	0.905	0.016	1.33	<0.05	<0.2	0.14	<0.0002
2-913-D061-0303	41-23	3.5	0.542	0.043	0.312	<2.0	0.52	1.31	<0.0002
9-FIA-D041-6651	4-25	0.4	66.4	0.038	0.09	20.25	<0.2	0.15	<0.0002
2-400-D065-0279	13-29	0.010	0.796	0.018	0.03	0.007	0.035	0.42	<0.0002
2-429-D065-0277	4-30	0.050	0.732	0.239	0.50	0.019	0.068	<0.01	<0.0002
1-534-D101-A303	24-36	0.015	0.713	0.031	<0.02	<1.0	0.113	1.3	<0.0002
3-535-D132-0274	10-37	0.055	0.514	0.027	0.1	<1.0	0.114	1.25	<0.0002
3-FIA-D101-6945	3-38	0.012	36.6	0.011	0.72	<0.5	<0.2	0.37	<0.0002
5-FIA-D069-6395	11-45	0.043	0.478	0.017	0.17	<2.0	—	1.37	<0.0002
3-FYC-D069-0116	22-48	1.5	0.388	0.039	0.06	<0.5	<0.2	0.59	<0.0002
1-FIA-D069-6397	5-79	<0.2	0.45	0.023	0.27	2.62	<0.2	<0.01	<0.0002
1-FIA-D044-6294	1-82	0.5	14100	0.022	1.28	<0.05	<0.2	0.14	<0.0002

Jul-90

88

PC LOT MARK	SAMPLE CODE	CONCENTRATION OF EP TOXICITY ELEMENTS IN mg/l (ppm)						FROM IT CORP	
		ARSENIC	BARIUM	CADMIUM	CHROMIUM	LEAD	SELENIUM	SILVER	MERCURY
93-510-D023-0273	1-103	<0.2	0.36	<0.005	<0.02	<0.05	<0.2	<0.01	<0.0002
82-916-D061-0300	23-4	0.108	0.879	0.041	0.06	0.18	0.017	1.11	<0.0002
82-913-D061-0299	19-5	0.053	0.831	0.109	0.11	0.014		2.99	<0.0002
20-310-D062-0295	3-6	0.015	0.819	0.013	0.18	<1.0	0.061	1.16	<0.0002
82-916-D061-0291	9-8	0.046	1.78	0.028	0.05	<1.0		1.53	<0.0002
48-742-D042-0303	4-9	0.058	0.088	0.030	0.09	<1.0	<0.2	1.12	<0.0002
93-530-D030-0272	4-11	0.5	8150	0.009	0.11	<0.2	<0.4	0.12	<0.0002
82-913-D061-0275	10-13	0.045	0.789	0.175	0.15	0.019		<0.01	<0.0002
82-917-D061-0275	4-15	0.092	0.424	0.140	0.15	0.012	<0.3	<0.01	<0.0002
82-916-D061-0269	15-16	0.072	0.397	0.142	0.16	0.007	<0.2	<0.01	<0.0002
93-530-D030-0285	7-7	<0.2	1.14	<0.002	<0.02	<0.05	<0.2	<0.01	0.0012
48-FYC-D065-0451	7-47	<0.2	0.713	<0.002	0.05	<0.05	<0.2	<0.01	0.0003
92-550-D070-0296	29-104	2.8	0.25	0.006	0.04	<0.05	<0.2	1.01	<0.0002
93-514-D079-0258	4-100	1.0	0.232	0.007	<0.4	<0.5	<0.2	0.27	<0.0002

687

'C LOT MARK	SAMPLE CODE	CONCENTRATION OF EP TOXICITY ELEMENTS IN mg/l (ppm)						FROM IT CORP	
		ARSENIC	BARIUM	CADMIUM	CHROMIUM	LEAD	SELENIUM	SILVER	MERCURY
12-400-D082-5569	11-112	1.0	0.25	0.014	0.02	<0.05	<0.2	0.42	<0.0002
3-511-D082-0285	1-113	<0.2	0.03	<0.005	<0.02	<0.05	<0.2	<0.01	<0.0002
3-518-D084-0289	1-115	<0.2	0.68	<0.005	<0.02	<0.05	<0.2	0.03	<0.0002
0-311-D082-0307	1-116	1.2	0.29	0.013	<0.02	<0.05	<0.2	0.34	<0.0002
3-530-D030-0282	6-1	<0.2	1.12	0.003	<0.02	<0.05	<0.2	<0.01	0.0002
3-PTA-D060-6903	8-10	<0.2	0.863	0.002	<0.02	<0.05	<0.2	<0.01	<0.0002
2-660-D061-0267	3-12	0.2	2.75	0.013	0.03	<0.05	<0.2	0.07	<0.0002
3-512-D062-A302	32-18	<0.2	0.007	<0.002	<0.02	<0.05	<0.2	0.04	<0.0002
3-520-D062-A302	41-19	0.2	0.662	0.006	<0.02	<0.05	<0.2	0.18	<0.0002
3-519-D062-A302	17-20	<0.2	0.637	0.003	<0.02	<0.05	<0.2	0.09	<0.0002
3-523-D062-A300	3-21	<0.2	0.732	0.004	<0.02	<0.05	<0.2	0.11	<0.0002
2-520-D062-0272	22-22	<0.2	0.830	0.004	<0.02	<0.05	<0.2	0.04	<0.0002
1-510-D065-0301	11-24	0.2	1.10	0.032	0.052	<0.05	<0.2	0.03	<0.0002
1-620-D044-0294	4-26	<0.2	0.019	<0.002	<0.02	0.11	<0.2	<0.01	<0.0002

LOT MARK	SAMPLE CODE	CONCENTRATION OF EP TOXICITY ELEMENTS IN mg/l (ppm) FROM IT CORP							
		ARSENIC	BARIUM	CADMIUM	CHROMIUM	LEAD	SELENIUM	SILVER	MERCURY
620-D045-0294	5-27	0.2	3.64	0.031	0.253	<0.05	<0.4	0.48	<0.0002
536-D132-0280	10-28	0.4	0.844	0.040	0.02	<0.2	<0.4	0.19	<0.0002
240-D033-0281	35-40	<0.2	1.26	<0.002	0.96	<0.05	<0.2	<0.01	<0.0002
920-D044-0249	5-41	0.2	0.862	0.003	0.04	<0.05	<0.2	0.63	<0.0002
520-D058-0285	5-42	<0.2	0.685	<0.002	<0.02	<0.05	<0.2	<0.01	<0.0002
642-D060-0288	6-43	<0.2	9.10	<0.002	<0.02	<0.05	<0.2	<0.01	<0.0002
643-D060-0277	25-44	<0.2	0.603	<0.002	<0.02	<0.05	<0.2	<0.01	<0.0002
762-D033-0221	3-49	0.5	0.29	<0.005	<0.02	<0.05	<0.2	<0.01	<0.0002
762-D033-0240	9-50	0.2	1.10	<0.005	0.16	<0.05	<0.2	<0.01	<0.0002
240-D033-0288	93-51	<0.2	0.38	<0.005	1.29	<0.05	<0.2	<0.01	<0.0002
805-D042-0287	4-52	<0.2	0.21	<0.005	<0.02	<0.05	<0.2	<0.01	<0.0002
900-D042-0276	7-56	<0.2	1.16	<0.005	<0.02	<0.05	<0.2	<0.01	<0.0002
827-D058-0269	20-58	<0.2	0.32	<0.005	<0.02	<0.05	<0.2	<0.01	<0.0002
965-D069-0194	21-46	<0.2	0.569	<0.002	<0.02	<0.05	<0.2	0.03	<0.0002

C LOT MARK	SAMPLE CODE	CONCENTRATION OF EP TOXICITY ELEMENTS IN mg/l (ppm)							FROM IT CORP
		ARSENIC	BARIUM	CADMIUM	CHROMIUM	LEAD	SELENIUM	SILVER	MERCURY
3-827-D058-0269	31-105	<0.2	0.28	<0.005	0.06	<0.05	<0.2	<0.01	<0.0002
2-732-D011-0299	H2-2	<0.2	1.43	0.038	0.24	<0.05	<0.2	<0.01	<0.0002
3-530-D030-0289	6-3	<0.2	0.238	0.003	<0.02	<0.05	<0.2	<0.01	<0.0002

0.95% ENR

FMPC

REPORT OF CHEMICAL ANALYSES

(NOTE: Write Firmly — Part 4 must be legible.)

FMPC-1 200 (REV 5/88)

Lab. Nos. 5P-2851

Lot No. X500-564-V034-1001

Analyses Requested % Uranium
E.P. Toxicity, Free Metal

MATERIAL: MgF_2

ACCOUNT NO.: ~~[illegible]~~ PHS 50

DATE SAMPLED: 6/23/89

SUBMITTED BY: LEE FREDERICK

REMARKS: Sampling Study
Composite Sample
"Pair"
[illegible]

LAB. NO.	IDENTIFICATION
	L-8

ANALYTICAL DATA

Total % U		% Free Metal U			
1.72		1.64			
	OK SCM 6-26-89				

EP TOXICITY mg/L

As	Ba	Cd	Cr
<1.0	<25	<0.2	<1.0
✓	✓	✓	✓

Pb	Hg	Se	Ag
<1.0	<0.1	<0.1	<1.0
✓	✓	✓	✓

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Approved By A Wolesky Date of Report 8/8/89

NLO, Inc.
A SUBSIDIARY OF NL INDUSTRIES, INC.
CINCINNATI, OHIO 45239

3511

June 19, 1985

:CT WASTE MANAGEMENT RESIDUES - EXTRACTION PROCEDURE TOXICITY (40 CFR 261.24)

J. R. Prall

A. F. Volesky, A. L. Brueneman

RENCE

1. "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," United States Environmental Protection Agency, Office of Water and Waste Management, Washington, DC, 1980.
2. "Rules and Regulations," Federal Register, Vol. 45, No. 98, May, 1980.
3. "Methods for Analysis of Water and Wastes," Environmental Monitoring and Support Laboratory, Office of Research and Development, United States Environmental Protection Agency, Cincinnati, Ohio (EPA-600/4-79-020, March 1983).

A. J. Potter of the Waste Management Department recently submitted five residue type materials to be submitted to the Extraction Procedure Toxicity (EP Toxicity) test. The samples were identified as follows:

Lab No.	Identification
8-3641	H093-513-D-034-0276 Depleted MgF_2
8-3642	VVB-001 Slag Leach Filter Cake - Neutralized
14-1291	H093-564-D-034-0276 Depleted MgF_2
14-1293	VVB-001 Slag Leach Filter Cake - Neutralized
14-1294	VVB-002 Copper Contaminated Raffinate Cake - Neutralized

The procedure used for the test is given in References 1 and 2. For each of the samples, a 100 g subsample was used. The solid material was extracted for 24 hours in deionized water whose pH was maintained at 5.0 ± 0.2 using 0.5N acetic acid. The pH was maintained manually. The container used for the extraction was a 1 gallon glass jar containing the sample with 16 times its weight of deionized water. The UO_3 tumbler in the Sample Lab was used to provide sufficient agitation to the mixture. The amount of added 0.5N acetic acid did not exceed the maximum of 4 mL per gram of sample. After extraction, the liquid:solid ratio was adjusted to 20:1 (2000 mL), and the mixture of solid and extraction liquid was separated by filtration through a 0.45 micron membrane filter.

Each of the sample extracts was then analyzed for arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver by procedures given in Reference 3. Given in Tables I through VIII are the results obtained from the analyses of each of these elements.

In addition to the results reported, the following observation was noted. For sample number 14-1294, the maximum allowable amount of 0.5N acetic acid was used during the pH adjustment procedure. The final pH of the solution was 12.5.

A F Volesky /RP
A. F. Volesky

A. L. Brueneman
A. L. Brueneman

AFV/ALB/jac
Encl.
cc: C. E. Pepper
M. L. Russell
J. F. Werdmann

TABLE I

EP TOXICITY - ARSENIC

Lab No.	Concentration, mgL^{-1}		Reported Value, mgL^{-1}
8-3641	0.022	0.023	<1.0
	0.025	0.028	
	0.025	0.013	
	0.024	0.023	
	Average	0.023	(5-20-85)
8-3642	0.30	0.23	<1.0
	0.28	0.21	
	0.32	0.20	
	0.23		(5-20-85)
	Average	0.25	
14-1291	<0.001	<0.001	<1.0
	<0.001	<0.001	
	Average	<0.001	(5-25-85)
14-1293	0.013	0.011	<1.0
	0.015	0.014	
	0.010		
	Average	0.013	(6-19-85)
14-1294	0.084	0.091	<1.0
	0.087	0.091	
	Average	0.088	(5-25-85)

Method: 206.2 (Graphite Furnace Technique)

TABLE II

EP TOXICITY - BARIUM

Lab No.	Concentration, mgL^{-1}		Reported Value, mgL^{-1}
8-3641	0.67	0.59	<25
	0.58	0.56	
	Average	0.60	(5-13-85)
8-3642	0.33	0.26	<25
	0.29	0.36	
	Average	0.31	(5-13-85)
14-1291	0.084	0.088	<25
	0.094	0.083	
	Average	0.087	(5-22-85)
14-1293	1.16	1.24	<25
	1.33	1.35	
	Average	1.27	(5-23-85)
14-1294	6.14	6.02	<25
	6.40	5.99	
	Average	6.14	(5-25-85)

Method: 208.2 (Graphite Furnace Technique)

TABLE III

EP TOXICITY - CADMIUM

Lab No.	Concentration, mgL^{-1}		Reported Value, mgL^{-1}
8-3641	0.017	0.008*	<0.2
	0.010	0.030*	
	0.021	0.008*	
	0.022		(4-17-85)
	Average	0.017	(4-23-85)
8-3642	0.032	0.020*	<0.2
	0.043	0.034*	
	0.034	0.016*	
	0.044		(4-17-85)
	Average	0.032	(4-23-85)
14-1291	0.016	0.006	<0.2
	0.010	0.005	(4-17-85)
	Average	0.009	(4-23-85)
14-1293	0.029	0.019	<0.2
	0.023	0.016	(4-17-85)
	Average	0.022	(4-23-85)
14-1294	0.116	0.110	<0.2
	0.116	0.109	(4-17-85)
	Average	0.113	(4-23-85)

Method: 213.1 (Flame Atomic Absorption, direct aspiration)

*Values determined by standard addition.

TABLE IV

EP TOXICITY - CHROMIUM

Lab No.	Concentration, mgL^{-1}		Reported Value, mgL^{-1}
8-3641	0.001	0.008	<1.0
	0.006	0.006	
	0.006	0.008	
	0.007	0.007	
	0.008	0.004	(4-17-85)
	0.004	0.010*	(4-18-85)
	Average	0.006	(4-26-85)
8-3642	0.019	0.028	<1.0
	0.024	0.024	
	0.029	0.022	
	0.029	0.025	
	0.027	0.022	(4-17-85)
	0.020		(4-18-85)
	Average	0.024	(4-26-85)
14-1291	0.011	0.009	<1.0
	0.015	0.014	
	Average	0.012	(5-28-85)
14-1293	0.018	0.020	<1.0
	0.015	0.023	
	Average	0.019	(5-28-85)
14-1294	0.030	0.032	<1.0
	0.028	0.029	
	Average	0.030	(5-28-85)

Method: 218.1 (Flame Atomic Absorption, direct aspiration)

*Value determined by standard addition.

TABLE V

EP TOXICITY - LEAD

Lab No.	Concentration, mgL^{-1}		Reported Value, mgL^{-1}
8-3641	0.011	0.015*	<1.0
	0.011	0.014*	
	0.011	0.013*	
	Average	0.012	(6-20-85)
8-3642	0.008	0.008	<1.0
	0.008		
	Average	0.008	(6-20-85)
14-1291	0.068	0.058	<1.0
	Average	0.063	(6-1-85)
14-1293	0.024	0.015	<1.0
	0.036	0.032	
	0.027*		
	Average	0.027	(6-1-85)
14-1294	0.411	0.326	<1.0
	0.382	0.297	
	Average	0.354	(6-1-85)

Method: 239.2 (Graphite Furnace Technique)

*Value determined by standard addition.

TABLE VI

EP TOXICITY - MERCURY

Lab No.	Concentration, mgL^{-1}	Reported Value, mgL^{-1}
8-3641	<0.001 <0.001 <0.001 Average <0.001	<0.1 (6-13-85)
8-3642	<0.001 <0.001 Average <0.001	<0.1 (6-13-85)
14-1291	<0.001 <0.001 Average <0.001	<0.1 (6-13-85)
14-1293	<0.001 0.001 0.001* Average 0.001	<0.1 (6-13-85)
14-1294	<0.001 <0.001 Average <0.001.	<0.1 (6-13-85)

Method 245.1 (Hydride Generation, Manual Cold Vapor Technique)

*Value determined by standard addition.

TABLE VII

EP TOXICITY - SELENIUM

Lab No.	Concentration, mgL^{-1}		Reported Value, mgL^{-1}
8-3641	0.003	0.004	<0.1
	0.004	0.004	
	Average	0.004	(5-16-85)
8-3642	0.060	0.057	<0.1
	0.058	0.046	
	Average	0.055	(5-16-85)
14-1291	0.010	0.009	<0.1
	0.012	0.010	
	Average	0.010	(5-25-85)
14-1293	0.004	0.006	<0.1
	0.004	0.008	
	Average	0.006	(5-25-85)
14-1294	0.062	0.072	<0.1
	0.069	0.065	
	Average	0.067	(5-25-85)

Method: 270.2 (Graphite Furnace Technique)

TABLE VIII

EP TOXICITY - SILVER

Lab No.	Concentration, mgL^{-1}		Reported Value, mgL^{-1}
8-3641	0.004	0.003	<1.0
	0.006	0.006*	
	0.002	0.002*	
	0.004	0.012*	
	<0.001	0.008*	
	0.006		(4-17-85)
	Average	0.005	(4-24-85)
8-3642	0.014	0.028	<1.0
	0.028	0.030*	
	0.028	0.028*	
	0.015	0.026*	
	0.032	0.018*	(4-17-85)
	Average	0.025	(4-24-85)
14-1291	0.008	0.009	<1.0
	0.009	0.009	
	Average	0.009	(5-28-85)
14-1293	0.012	0.011	<1.0
	0.009	0.015	
	Average	0.012	(5-28-85)
14-1294	0.054	0.053	<1.0
	0.053	0.054	
	Average	0.054	(5-28-85)

Method: 272.1 (Flame Atomic Absorption, direct aspiration)

*Values determined by standard addition.

NLO, Inc.

A SUBSIDIARY OF NL INDUSTRIES, INC.

P. O. BOX 39158 CINCINNATI, OHIO 45239

PHONE: AREA CODE 513-738-6200

3511

JUN 21 1985

Mr. R. C. Sleeman
Radioactive Waste Management Program
Department of Energy
Oak Ridge Operations
P. O. Box E
Oak Ridge, TN 37831

Dear Mr. Sleeman:

EP TOXICITY TEST RESULTS - LLW

Reference: Telecom, R. C. Sleeman to S. A. Castle, June 5, 1985, "Documentation of LLW EP Toxicity Results"

Attached are the results of Extraction Procedure (EP) Toxicity Tests performed [illegible] the FMPC Analytical Laboratory on samples of three (3) different FMPC low-[illegible]l waste materials identified for shipment to the Nevada Test Site (NTS). [illegible]results show that FMPC samples of slag leach cake (VVB-001), neutralized raffinate (VVB-002) and magnesium fluoride are less than levels specified in 40 CFR 261.24 and, therefore, are not considered to be hazardous wastes.

We hope this information will be adequate for documentation of EP toxicity testing for these materials. If you have questions pertaining to this submittal, or if you need additional information, please contact D. E. Diehl (FTS 774-6459) or S. A. Castle (FTS 774-6394).

Sincerely yours,
Original Signed By
R. M. SPENCELEY
Manager

R. M. Spenceley
Manager

SAC/lar
Att.
cc w/att:

G. R. Blank	R. C. Kispert
S. A. Castle	N. R. Leist
[illegible]R. Diehl	C. E. Pepper
[illegible] Diehl	A. J. Potter
J. L. Dunaway	J. R. Prall
R. L. Gardner	A. F. Volesky
B. Gessiness	R. B. Weidner
J. H. Harrison	R. H. Cross ORO
D. B. Katz	J. A. Reafsnyder ORO

702

EP TOXICITY TESTS - LLW MATERIAL

Material	Arsenic mg/l	Barium mg/l	Cadmium mg/l	Chromium mg/l	Lead mg/l	Mercury mg/l	Selenium mg/l	Silver mg/l
Slag Leach VVB-001	<1.0	<25.0	<0.2	<1.0	<1.0	<1.0	<0.1	<1.0
Neutral-ized Raffinate Cake VVB-002	<1.0	<25.0	<0.2	<1.0	<1.0	<1.0	<0.1	<1.0
Magnesium Fluoride Slag	<1.0	<25.0	<0.2	<1.0	<1.0	<1.0	<0.1	<1.0

[redacted] Volesky (6521) WMCO:CG:87-015

Date: February 29, 1988

Subject: RCRA WASTES - EP TOXICITY EXTRACTIONS

To : J. R. Prall

The FMPC Analytical Laboratories became involved with the analysis of the Environmental Safety and Health (ES&H) Department's Resource Conservation and Recovery Act (RCRA) waste on February 5, 1988. WMCO's ES&H Department has contracted International Technology Corporation (IT) of Oak Ridge, TN to perform toxicity testing on waste materials suitable for shipment and disposal at the Nevada Test Site (NTS).

As a result of an IT preliminary analysis report, J. W. Neyer requested that we perform toxicity testing on 16 of 48 wastes that failed the Toxicity Characteristic Leaching Procedure (TCLP) at IT. Prior to Neyer's request, conversations with J. M. Carr revealed concerns with the preliminary results being reported by IT. Limits for the eight elements cited as being toxic are given in Attachment A.

The Analytical Department agreed to analyze EP Toxicity extracts on these 16 samples on an EXPEDITE basis. Only five of the eight elements were to be studied. These include arsenic, barium, lead, selenium, and silver.

Originally, plans were made to return the same samples to the FMPC that were sent to IT for analysis. However, since IT had not yet completed their work and due to the urgency of the matter, new samples were taken in the plant. Of the 16 samples that IT had preliminarily identified as toxic, 13 were available for resample. The remaining lots in question were either consumed in operation or combined with other lots and were unavailable for resampling. These thirteen resamples were taken on 2-8-88 by plant personnel. The Environmental Compliance Chain of Custody transfer was recorded by J. R. Prall on 2-8-88 at 5:00 pm.

The following day, FMPC Report of Chemical Analysis forms were prepared. The samples were then logged in by Sample Laboratory personnel and sent to the Special Samples Laboratory for EP Toxicity testing. Ten of the thirteen samples were subjected to a grinding, screening, and blending process to improve subsampling. A U.S. Standard Series No. 40 (35 mesh) stainless steel sieve and porcelain mortar and pestle were used to screen the samples. Three of the thirteen samples were wet and were finely divided and were treated as received.

Analytical work was completed on the EP Toxicity extracts on February 26, 1988. One of the thirteen samples has been identified as failing the test. The reported results are given in Attachment B while Attachment C lists the actual values determined. To obtain these values, graphite furnace standard addition techniques were employed for arsenic, selenium, lead, and silver. Barium was determined by high temperature flame AAS.

At the time of the original analytical request, Neyer requested that we also perform total metals analyses on the samples. At this time, the value of this study has been questioned, and this work has been suspended.

A. F. Volesky

A. F. Volesky

AFV/pje

Attachments

cc: B. S. Barnes
A. L. Brueneman
R. D. Ohlinger

Attachment A

MAXIMUM CONCENTRATION OF CONTAMINANTS FOR CHARACTERISTIC OF EP TOXICITY

EPA Waste Number	Contaminant	Concentration mgL^{-1}
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0

Reference: 40 CFR 261.24(b), Table I.

mg/l = mg L^{-1} = ppm

Attachment B

RCRA Wastes - EP Toxicity Results
(Reported results - mgL^{-1})

Lab No./ID No.	As	Se	Ag	Pb	Ba
12-9311 (H093-534-D101-A303)	<1.0	<0.1	<1.0	<1.0	<25
12-9312 (H082-913-D061-0303)	<1.0	<0.1	<1.0	<1.0	<25
12-9313 (H082-913-D061-0275)	<1.0	<0.1	<1.0	<1.0	<25
12-9314 (H082-917-D061-0275)	<1.0	<0.1	<1.0	<1.0	<25
12-9315 (H082-916-D061-0269)	<1.0	<0.1	<1.0	<1.0	<25
12-9316 (H093-530-D030-0272)	<1.0	<0.1	<1.0	<1.0	<25
12-9317 (X948-742-D042-0303)	<1.0	<0.1	<1.0	3.8	<25
12-9318 (H082-916-D061-0300)	<1.0	<0.1	<1.0	<1.0	<25
12-9319 (H082-913-D061-0299)	<1.0	0.12	<1.0	<1.0	<25
12-9320* (S059-FTA-D041-6651)	<1.0	<0.1	<1.0	105	83
12-9321 (S053-FTA-D069-6395)	<1.0	<0.1	<1.0	<1.0	<25
12-9322 (H120-310-D062-0295)	<1.0	<0.1	<1.0	<1.0	<25
12-9323 (H082-916-D061-0291)	<1.0	0.18	<1.0	<1.0	<25

*Fails EP Toxicity for Lead.

Attachment C

RCRA Wastes - EP Toxicity Results
(Actual results - mgL^{-1})

Lab No./ID No.	As	Se	Ag	Pb	Ba
12-9311 (H093-534-D101-A303)	0.002	0.002	0.001	0.010	0.62
12-9312 (H082-913-D061-0303)	0.024	0.072	0.009	0.076	0.70
12-9313 (H082-913-D061-0275)	0.044	0.098	0.008	0.094	1.40
12-9314 (H082-917-D061-0275)	0.031	0.076	0.010	0.067	1.96
12-9315 (H082-916-D061-0269)	0.052	0.090	0.014	0.089	0.18
12-9316 (H093-530-D030-0272)	0.014	0.009	<0.001	0.024	0.32
12-9317 (X948-742-D042-0303)	0.037	0.022	0.003	3.84	4.96
12-9318 (H082-916-D061-0300)	0.058	0.092	0.018	0.095	0.06
12-9319 (H082-913-D061-0299)	0.051	0.125	0.014	0.089	0.74
12-9320* (S059-FTA-D041-6651)	0.013	0.018	<0.001	105	82.6
12-9321 (S053-FTA-D069-6395)	0.033	0.039	0.003	0.093	0.70
12-9322 (H120-310-D062-0295)	0.022	0.054	0.002	0.025	0.42
12-9323 (H082-916-D061-0291)	0.157	0.183	0.016	0.088	0.56

*Fails EP Toxicity for Lead.

The work on the total metals analysis was reactivated on 3-1-88 at the request of J. W. Neyer (L. C. Bogar). The work was completed and reported on 3-31-88. A copy of the results is given in Attachment D.

Attachment D

RCRA Wastes - EP Toxicity Total Metals Results
(Reported results - wt. %)

Lab No./ID No.	As	Se	Ag	Pb	Ba
12-9311 (H093-534-D101-A303)	0.0001	0.0002	0.00005	0.022	0.0017
12-9312 (H082-913-D061-0303)	0.0005	0.0017	0.00022	0.016	0.0017
12-9313 (H082-913-D061-0275)	0.0006	0.0022	0.00024	0.016	0.0014
12-9314 (H082-917-D061-0275)	0.0014	0.0020	0.00020	0.016	0.0038
12-9315 (H082-916-D061-0269)	0.0017	0.0005	0.00028	0.017	0.0037
12-9316 (H093-530-D030-0272)	0.0005	0.0018	0.00009	0.022	0.0047
12-9317 (X948-742-D042-0303)	0.0035	0.0023	0.0019	0.17	0.268
12-9318 (H082-916-D061-0300)	0.0010	0.0006	0.00032	0.007	0.0046
12-9319 (H082-913-D061-0299)	0.0011	0.0005	0.00046	0.008	0.0043
12-9320 (S059-FTA-D041-6651)	0.0034	0.0011	0.00024	0.24	3.37
12-9321 (S053-FTA-D069-6395)	0.0006	0.0011	0.00017	0.011	0.028
12-9322 (H120-310-D062-0295)	0.0003	0.0002	0.00011	0.006	0.014
12-9323 (H082-916-D061-0291)	0.0012	0.0015	0.00072	0.009	0.0079

III. WASTE STREAM INFORMATION

G. WASTE CHARACTERIZATION PROGRAM

3. Waste Analysis Results

SUMMARY SHEET OF RADIOACTIVE/HAZARDOUS CONSTITUENTS

CONSTITUENT HAZARDOUS/RADIOACTIVE	CONCENTRATION LOW/MEAN/HIGH
Waste Stream No.: ONLO-000000001	
Uranium 238 (0.10% to 1.0% U)	0.3330E-06 curies/gram U-238
Uranium 235 (0.2% to 3.99% U-235)	0.2140E-05 curies/gram U-235
Uranium 234 (0.001% to 0.01% U-324 on a U basis)	0.3360E-06 curies/gram Total U
Waste Stream No.: ONLO-000000002	
Uranium 238 (0.1% to 10% U)	0.3330E-06 curies/gram U-238
Uranium 235 (0.2% to 1.0% U-235)	0.2140E-05 curies/gram U-235
Uranium 234 (0.001% to 0.01% U-324 on a U basis)	0.3360E-06 curies/gram Total U
Waste Stream No.: ONLO-000000003	
Uranium 238 (1% to 20% U)	0.3330E-06 curies/gram U-238
Uranium 235 (0.2% to 2.0% U-235)	0.2140E-05 curies/gram U-235
Uranium 234 (0.001% to 0.01% U-324 on a U basis)	0.3360E-06 curies/gram Total U
Waste Stream No.: ONLO-000000004	
Uranium 238 (1% to 20% U)	0.3330E-06 curies/gram U-238
Uranium 235 (0.2% to 2.0% U-235)	0.2140E-05 curies/gram U-235
Uranium 234 (0.001% to 0.01% U-324 on a U basis)	0.3360E-06 curies/gram Total U
Waste Stream No.: ONLO-000000005	
Thorium 232 (1% to 100% Th)	0.1090E-06 curies/gram Th
Thorium 228 (natural %)	0.1096E-06 curies/gram Th
Uranium 233 (13 ppm on a Th basis)	0.1232E-06 curies/gram Th
Thorium 230 (natural %)	0.1100E-07 curies/gram Th

III. WASTE STREAM INFORMATION

H. WASTE ACCEPTANCE CRITERIA CERTIFICATION SUMMARY

1. General Regulatory Criteria for Packages

Waste packaging criteria for low level waste shipped to the NTS for disposal shall meet DOT regulations, 49 CFR 173, Subpart I. Standard operating procedures listed in Table 1 concerning storage and off-site shipments shall be used to assure that all shipments meet DOT requirements.

1.1 In compliance with 49 CFR 173.451, Fissile Materials, process residues are routinely sampled by process lot and analyzed for percent uranium and percent uranium-235. Standard operating procedures (SOP) (Table 1, Appendix I) detail the frequency and specific analysis to be performed on each container of material.

External radiation levels of each waste package are measured using calibrated instruments for determination of compliance, and calculation of the transport index when required by 49 CFR 173.455.

Analysis has shown that MgF_2 waste material from the depleted or natural uranium metal production lines contains approximately 1 to 5% uranium. The filter cake produced by leaching and filtering MgF_2 from the enriched uranium line contains approximately 0.1% uranium. Calculations using these values indicated that the normal or depleted material would contain 0.003 g/kg of uranium. The depleted or normal containers do not pose any danger of criticality even with 0.050 g/kg of normal or depleted uranium, and the 0.003 g/kg of the enriched uranium is insufficient material for criticality even at optimum configuration. Standard operating procedures (Table 1, Appendix I) detail the frequency and specific analysis to be performed on each container of material.

1.2 In compliance with 49 CFR 173.442, Thermal Limitations, the heat generated by the quantity of ^{235}U in any one of the containers (max 0.4 kg) is far less than 0.1 W. This calculation is based on 2.15×10^{-6} Ci/g and a heat output of 0.027 W/Ci. For the ^{238}U the Ci/g value is 3.34×10^{-7}; therefore, even 0.050 g/kg of uranium would still produce <0.1 W.

1.3 In compliance with 49 CFR 173.441, Radiation Levels, the radiation exposure rate at the surface and at 1 m of each package shall be measured and recorded in the data package. Packages that exceed 200 millirem/hr on contact and/or 10 millirem/hr at 1 m shall not be shipped to NTS.

III. WASTE STREAM INFORMATION

H. WASTE ACCEPTANCE CRITERIA CERTIFICATION SUMMARY

1.4 In compliance with 49 CFR 173.443, the surface contamination of each container shall be measured using instruments calibrated by the OS&H Dosimetry & Instrumentation Section and recorded in the data package. If these instruments indicate that the limits of 49 CFR 173.443 are exceeded, then the package shall be cleaned until it is within the limits or the contents shall be transferred to a clean container.

1.5 In compliance with 49 CFR 173.423, shipments of limited quantities (LQ) of radioactive materials, the quantity of radioactivity in any one package shall be less than the limits for low specific activity (LSA) material shipped under exclusive use transport (49 CFR 173.421 and 173.422 criteria). Shipments of LSA shall meet the specifications of 49 CFR 173.425. Each waste material package labeled LQ meets the specifications of 49 CFR 173.421.

In compliance with Title 49 CFR 173.421 and 173.425, strong, tight containers used for shipping limited quantities of low level waste (LLW) and LSA shall be constructed so that it will not leak during normal transportation and handling conditions. Any bulk LLW shall be shipped in closed transport vehicles unless an exception has been approved by NTS in accordance with Title 49 CFR 425(c). Containment of bulk waste shall be such that off-loading personnel can unload the waste without contaminating personnel or equipment.

1.6 The FMPC shall package all waste for shipment to NTS in containers meeting DOT specifications (e.g., 17H 55-gallon drums or other NTS approved containers). All containers shall be shipped to meet DOT requirements for interstate travel and shall meet the requirements of 49 CFR 173.411, 173.425, and 173.412.

1.7 Waste shipped to the NTS shall be marked and labeled as required in Title 49 CFR 172, Subparts D and E [with exceptions noted in Title 173.425 (b) and (c)]. Also each waste container shall be marked with a unique container identification number and shipment number so that the container can be identified from another container within the shipment or from another set of containers. Marking and labeling of the waste packages shall be for radioactive material.

1.8 Waste shall be packaged according to the level of hazard as defined in Title 49 CFR 173.2, "Classification of Material Having More Than One Hazard."

III. WASTE STREAM INFORMATION

H. WASTE ACCEPTANCE CRITERIA CERTIFICATION SUMMARY

2. NTS Specific Package Criteria

2.1 All package closures shall be sturdy enough that it will not be breached under normal handling conditions and will not serve as a weak point for package failure.

2.2 Except for waste packaged in steel drums, the waste container (packaging and contents) shall be capable of supporting a uniformly distributed load of 4,000 lbs/ft^2.

2.3 All waste containers shall have permanently attached skids, cleats, offsets, rings, handles, or other auxiliary lifting devices to allow handling by means of forklifts, cranes, or similar handling equipment. Lifting rings and other auxiliary lifting devices shall be recessed, offset, or hinged in a manner that does not inhibit stacking the packages. The lifting devices shall be designed to meet a 5:1 safety factor based upon the ultimate strength of the material. All rigging devices that are not permanently attached to the waste package shall have a current load test based on 125 percent of the safe working load.

2.4 WMCO shall use the recommended 4 x 4 x 7 ft. and 4 x 2 x 7 ft. boxes. In addition, 55-gallon drums shall be used. Additional containers WMCO would like to use upon DOE NV approval are listed in Section IV, Part A.

2.5 In addition to the weight limits set for specific packaging designs, a 9,000 lbs. limit per box and a 1,200 lbs. limit per 55-gallon drum shall be maintained. Containers exceeding the 9,000 lbs. limit shall be shipped in removable-top trailers.

2.6 Waste containers shall be loaded to ensure that the interior volume is as efficiently and compactly loaded as practical.

2.7 Containers conforming to DOT Specification 7A requirements comply with the lesser "strong, tight," requirement. When the Type 7A containers are used as "strong, tight," evaluation of the container under the DOE Type A Certification Program is not required, nor is a safety analysis of the containment and packaging system.

2.8 Every FMPC waste package shall be prepared for shipment so as to minimize damage during transit. The preshipment storage environment shall be controlled to avoid adverse influence from weather or other factors on the containment capability of the waste packaging during handling, storage, and transport. WMCO shall take all responsibility for preshipment storage and take all reasonable precautions to preclude the accumulation of moisture on or in packages prior to their arrival to the NTS.

III. WASTE STREAM INFORMATION

H. WASTE ACCEPTANCE CRITERIA CERTIFICATION SUMMARY

3. General Waste Form Criteria

3.1 Material intended for shipment to NTS will be basically in the forms listed in Section 1.4.1 of the Waste Certification Program Plan (Appendix I). The chemical composition of all the process waste forms consists of inorganic salts and, is not combustible.

3.2 Explosive materials shall be converted to nonreactive forms. Compressed gases, including unpunctured aerosol cans, shall not be sent to NTS for disposal.

The waste forms as described in Section 1.4.1 of the Waste Certification Program Plan (Appendix I) apply here and, again, the material is both nonpyrophoric and nonexplosive as contained in the containers. Supervisory control, the use of SOPs, and checklists shall ensure that all material shall have gone through the processes and shall have met the criteria.

3.3 All waste shall be controlled to prevent any free liquids. Waste streams such as slurries and residues which have wet consistencies are processed in the Rotary Kiln and/or Calciner to remove excess liquid before packaging. These materials are not hygroscopic and remain as prepared. The MgF_2 slag leach slurry is filtered through a bed of diatomaceous earth and dried under vacuum. This waste is then kiln dried or calcined to ensure that it does not contain any free liquid. Remaining waste streams that could contain free liquids are treated by adding absorbent during the packaging process.

3.4 Fine particulate waste shall be immobilized so that the waste package contains no more than one weight percent of less-than-10-micrometer-diameter, or 15 weight percent of less-than-200-micrometer-diameter particles with radioactive contamination. Permission has been obtained from NTS to double package all material as an alternative means of minimizing any potential release of fine particulates (NVO-325 Section 2.2.1.0). Any other material falling into this category shall be treated in the same manner and permission obtained from NTS as needed.

III. WASTE STREAM INFORMATION

H. WASTE ACCEPTANCE CRITERIA CERTIFICATION SUMMARY

3.5 Waste contained in the packages shall contain no radioactive waste mixed with hazardous waste as identified in 40 CFR-261. The SOPs detail the addition of all chemicals, and the checklists verify the addition of each. Tests on representative samples have shown no hazardous materials present.

3.6 The five principle wastes as described in Section 1.4.1 of the Waste Certification Program Plan (Appendix I) are nonreactive with the shipping containers. Other waste components are uncalcined diatomaceous earth or materials that have been oxidized in air.

All waste is segregated by waste stream type and compatibility at the FMPC at the point of generation. The FMPC-REST-3236 form [see Figure 5 of the Waste Certification Program Plan (Appendix I)] signed and completed for each waste container serves as a documented check. Containers and/or dumpsters, if possible, are closed and/or locked while unattended.

3.7 Low level radioactive waste analysis shall verify all wastes destined to the NTS for disposal shall have a transuranic (TRU) nuclide concentration less than 222,000 dpm per gram (100 nanocuries per gram).

3.8 LLW containing pathogens, infectious wastes, or other etiologic agents as defined in Title 49 CFR 173.386 is segregated at the point of generation for incineration and will not be sent to the NTS for disposal.

3.9 Bulk LLW shall be solid and meet the requirements of Title 49 CFR 173.425 (c)(1).

IV. EXEMPTION REQUESTS

A. Area of Noncompliance, Reason for Request, Requested Duration, and Plan for Corrective Action.

Areas of Noncompliance are as follows:

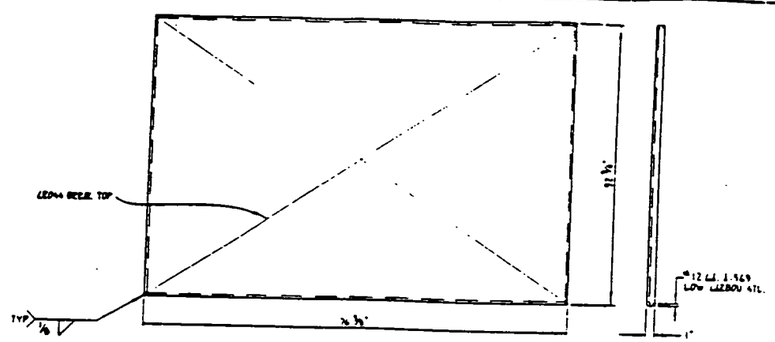
1.1 The following list of containers is presently being used by WMCO for shipment of waste to the NTS. All containers shall meet the NTS package strength requirement for disposal at Area 5 RWMS, except for sea/land containers and drums. The drums are exempted from the 4,000 pound per square foot requirement under Section 2.1.2b of NVO-325. WMCO has an approved exemption for the sea/land container because they are disposed of in Area 3 at NTS. WMCO would like to continue to use the waste containers which do not meet the package strength criteria until present stock (-458) is depleted (metal shipping container, drawing number 30A-5500-M-00059-0).

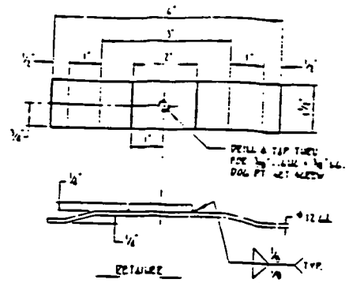
CONTAINERS	DRAWING NUMBERS
Metal Shipping Container (Sealloc Closer - As supplies last)	30A-5500-M-00059-0
Metal Shipping Container (7A, Type A positive closer bolt)	C 01-542-2-01
Metal Shipping Container (Clip style retainer)	D 89DW000800 8 (3 set drawing)
Sea/land Container	N/A

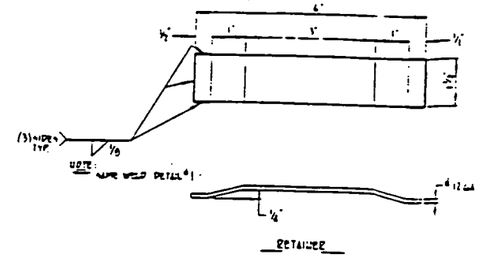
NOTE: Actual drawings contained in the above list appear after Section IV.

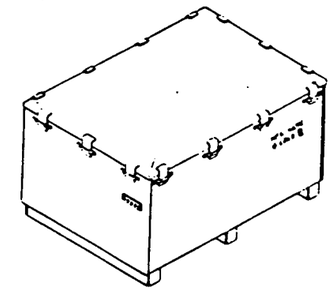
1.2 The FMPC requests that the DOE NRC Form 741 be sent to NTS within 24 hours <u>after</u> the shipment and not prior as requested by NVO-325 Section 5.1, Part B-1. (Form 741 must be on file in Nevada prior to shipment arrival.)

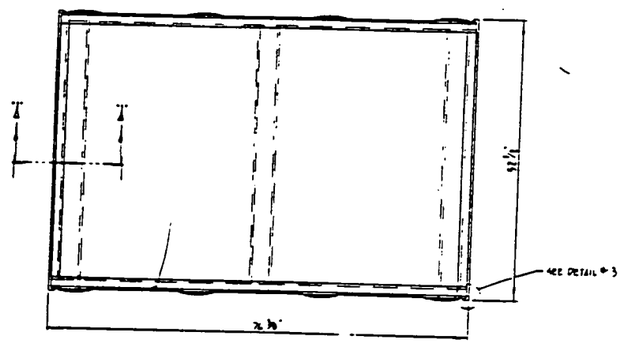
1.3 The FMPC requests that REECo Traffic Section be notified the same day after the shipment leaves the site rather than before as required in NVO-325 Section 5.1, Part A-1. The time zone difference between Ohio and Nevada makes morning notification impossible.

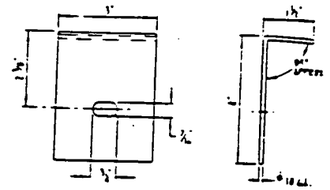


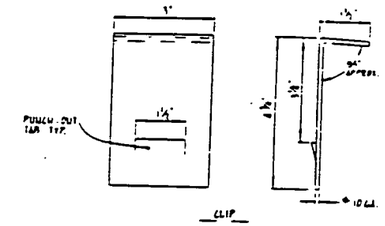












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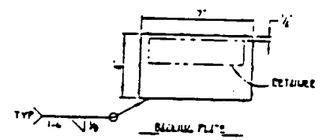

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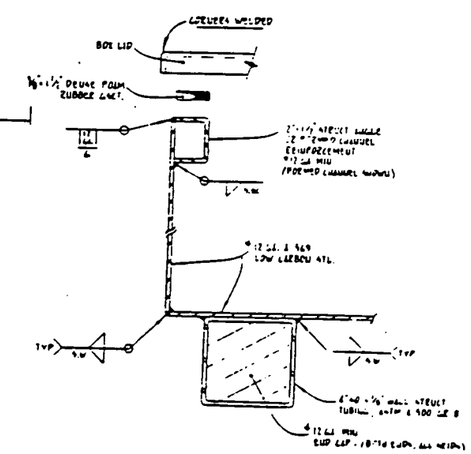

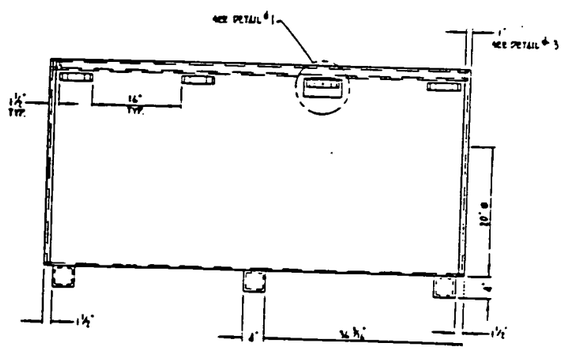

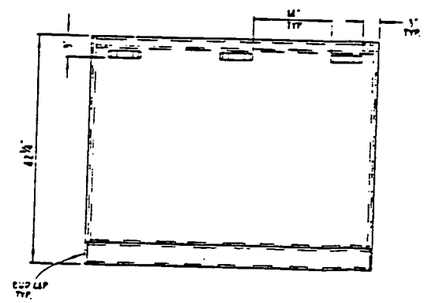

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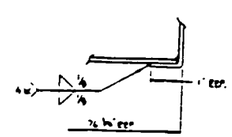

DETAIL # 3

GENERAL NOTES

1. INSIDE AND OUTSIDE OF CONTAINER AND LID SHALL BE COATED WITH (1) COAT OF RUST INHIBITOR AND A FINISH COAT OF WHITE ENAMEL.
2. ALL WELDING SHALL CONFORM WITH AWS STANDARD D1.3-66 FOR STEEL 1/8" THICK OR LESS.
3. VENDOR SHALL WELD A METAL PLATE ON ONE END OF CONTAINER WITH A (5) DIGIT SERIAL NUMBER STAMPED ON IT.
4. VENDOR'S NAME OR LOGO SHALL BE CLEARLY AND LEGIBLY MARKED ON FRONT AND REAR SIDE OF CONTAINER.
5. METAL CONTAINER SHALL BE CONSTRUCTED TO MEET THE REQUIREMENTS OF PARAGRAPH 173.24 OF TITLE 49 CFR. CERTIFICATION SHALL BE PROVIDED BY THE FABRICATOR.
6. NOMINAL CAPACITY OF FULL SIZE CONTAINER IS 3.50 CUBIC YARDS. HALF SIZE IS 1.7 CUBIC YARDS.
7. BASIC CONTAINER DIMENSIONS ARE NOMINAL. DETAIL DIMENSIONS TO BE ± 1/8." WELDING DETAILS AS SHOWN.

DO NOT SCALE REDUCED DRAWING

718

NO.	REVISIONS	DATE	DWN. BY	APPD.	NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.

APPROVAL

CHEMICAL		MAINTENANCE	
ENGINEERING		PRODUCTION	
INSTRUMENT		PROD TECH	
MECHANICAL		WASTE MANAGE	
CHECKED			
APPROVED			

WESTINGHOUSE MAT'LS. CO. OF OHIO
FERNALD, OHIO
FEED MATERIALS PRODUCTION CENTER
U.S. DEPARTMENT OF ENERGY

BLDG. 30 — WASTE SPEC.

METAL SHIPPING CONTAINER

DETAILS

PROJ. NO.	DATE	DRAWING				
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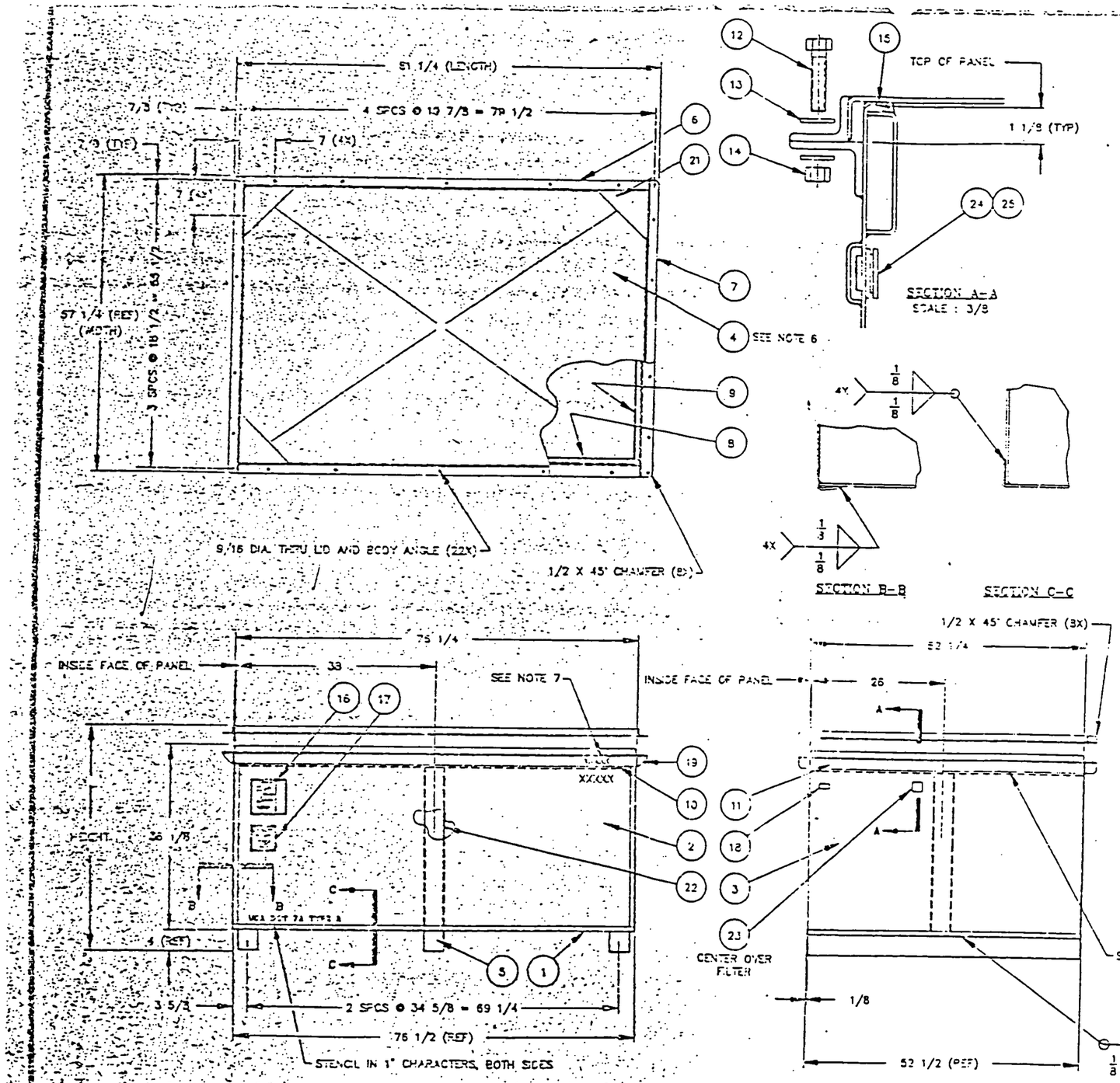

BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	DRAWING NO.
1	1	BOTTOM PANEL, 12 GA	01-542-3-01
2	2	SIDE PANEL, 12 GA	01-542-3-02
3	2	END PANEL, 12 GA	01-542-3-03
4	1	LID PANEL, 12 GA	01-542-3-04
5	2	RISER, 12 GA	01-542-3-05
6	2	2 X 1 1/2 ANGLE	20-0103-77 1/4
7	2	2 X 1 1/2 ANGLE	20-0103-57 1/4
8	2	4 X 1 CHANNEL, 10 GA	20-1115-73 7/8
9	2	4 X 1 CHANNEL, 10 GA	20-1115-51 1/4
10	2	2 1/2 X 2 ANGLE	20-0109-76 1/4
11	2	2 1/2 X 2 ANGLE	20-0109-57 1/4
12	22	BOLT	01-542-3-06
13	44	FLATWASHER, 1/2 CARBON STEEL	
14	22	HEX NUT, 1/2-13, GRADE 2	
15	2 FT	GASKET, 1/2 X 1 1/2	100.920
16	1	CPC DECAL	505.000
17	2	WARNING DECAL	508.000
18	1	SERIAL NUMBER TAG	507.000
19	4	GUSSET	01-542-3-07
20			
21	4	GUSSET	20-5002-10
22	4	4 X 1 CHANNEL, 10 GA	20-1115-31 7/8
23	1	2 X 1/2 CHANNEL, 12 GA	20-1101-2
24	1	FILTER	7720[illegible]
25	1	WELD FLANGE	7169.000

NOTES:

1. WELDING - EXCEPT WHERE SHOWN OTHERWISE, ALL WELD SIZES SHALL BE 1/3 X 3 LONG ON 12 CENTERS. ALL SEAMS SHORTER THAN 6 ARE CONTINUOUS WELDED. ALL INTERIOR SEAMS ARE CONTINUOUS WELDED.
2. ALL WELDING SHALL BE IN ACCORDANCE WITH SPECIFICATION 7A-101
3. ALL MATERIALS AND COMPLIANCE CRITERIA SHALL BE GOVERNED BY SPECIFICATION 7A-542.
4. PRIME INTERIOR AND EXTERIOR WITH RUST INHIBITIVE RED OXIDE PRIMER. FINISH EXTERIOR WITH 1 COAT OF ALKYD ENAMEL, COLOR AS SPECIFIED BY ORDER.
5. DIMENSIONS - LENGTH 76 I.D. 81 1/4 O.D.
   WIDTH 52 I.D. 57 1/4 O.D.
   HEIGHT 36 I.D. 40 1/2 O.D.
6. ALL EXTERIOR SURFACES THAT ARE NOT "SEAL" WELDED SHALL BE SEALED BETWEEN WELD BEADS WITH SEALANT (SILICONE OR EQUAL) PRIOR TO PAINTING.
7. CUSTOMER SUPPLIED SERIAL NUMBER TO BE STAMPED ON THE STRUCTURAL SUPPORT IN 1/4" CHARACTERS WHERE SHOWN ON ONE SIDE AND STENCILED IN WATER PROOF INK IN 1" CHARACTERS WHERE SHOWN ON BOTH SIDES.

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ECN	LTR	DESCRIPTION	DATE	APPR
757	A	REVISED NOTE 7	9/18/90	JFM

REVISIONS

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UNLESS OTHERWISE SPECIFIED ENGLISH DIMENSIONS ARE IN INCHES TOLERANCES ON
FRACTIONS ± 1/4
DECIMALS ±
ANGLES ±

MATERIAL: CARBON STEEL

CONTRACT NO.
DATE

PREPARED	J.H.	9/12/90
CHECKED	G.C.	9/14/90
ENGINEER	J.F.M.	9/14/90
MFG	L.T.	9/14/90

CONTAINER PRODUCTS CORPORATION

CONTAINER PRODUCTS CORPORATION

CONTAINER PRODUCTS CORPORATION

[illegible] Any unauthorized [illegible] shall be subject to [illegible] the employee of the MAS ASSEMBLY to receive any information in

SSB-88.3-5-7A-BRF

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Control #: _____

WO1

FMPC
Waste Application
To Ship Waste
To The
Nevada Test Site
APPENDIX I

FEED MATERIALS PRODUCTION CENTER

Westinghouse Materials Company of Ohio
P. O. BOX 398704
CINCINNATI, OHIO 45239-8704

PREPARED FOR THE

U.S. Department of Energy
OAK RIDGE OPERATIONS OFFICE
UNDER CONTRACT DE-AC05-860R21600

QA87001
Revision No. 5

WASTE CERTIFICATION PROGRAM PLAN

FOR

THE MANAGEMENT OF WASTE

BY

K. J. DUNBAR

WESTINGHOUSE MATERIALS COMPANY OF OHIO

P. O. Box 398704

Cincinnati, Ohio 45239

Revision No. 5 6-30-90

Prepared for:

U. S. Department of Energy
Weapons Division of Oak Ridge Operations
Contract DE-AC05-86OR21600

APPROVED:

Vice President, Quality

Manager, Operations

Prime Certification Officer

Manager, Materials Control & Accountability

Manager, Operation Facilities/ Waste Management

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RECORD OF REVISIONS

REVISION NO.	DATE
0	10/1/87
1	9/19/88
2	1/24/89
3	4/06/89
4	6/28/89
5	6/30/90

LIST OF EFFECTIVE PAGES

PAGE	REVISION NO.
1 - 95	3
8	4
10 - 11	4
14 - 16	4
17 - 18	4
23 - 25	4
30	4
36	4
40 - 43	4
45	4
49 - 50	4
52	4
54	4
59 - 60	4
62 - 63	4
68	4
70	4
72-74	4
1 - 107	5

WASTE CERTIFICATION PROGRAM PLAN

CONTENTS

SECTION	PAGE NUMBER
LIST OF FIGURES	6
LIST OF TABLES	7
EXECUTIVE SUMMARY	8
1.0 ORGANIZATION	10
1.1 FMPC Management Organization	10
1.2 Specific Waste Management Organization	10
1.3 Waste Certification Organization	11
1.4 Waste Management Program Description	13
1.5 Training of Packaging & Shipping Personnel	25
2.0 WASTE CERTIFICATION PROGRAM PLAN	26
2.1 Quality Assurance Policy Statement - Responsibilities	26
2.2 Statement of Independence - Interface Control	27
2.3 Waste Certification Program Description	29
2.4 Qualification of Waste Certification Personnel	30
2.5 Qualification of Waste Certification Official(s)	30
3.0 DESIGN CONTROL	30
3.1 Design of Waste Certification Process	30
3.2 Waste Form Processing for Compliance	32
3.3 Waste Packaging Processing for Compliance	36
4.0 PROCUREMENT DOCUMENT CONTROL	39
5.0 INSTRUCTIONS, PROCEDURES & DRAWINGS	41
5.1 Procedures for Waste Generation, Segregation, Packaging & Shipping	41
5.2 Analytical Procedures	43
5.3 Sample Custody	46
5.4 Drawings - Facilities, Process Equipment & Forms Control	86
5.5 Inspection & Certification Procedures	49
5.6 Procedures for Keeping Pertinent Regulations Up-To-Date	49
6.0 DOCUMENT CONTROL	50
6.1 Waste Certification Program Plan	50
6.2 Document Preparation, Review, Approval & Issuance	50
7.0 CONTROL OF PURCHASED ITEMS & SERVICES	52
7.1 Receipt Inspection	52
7.2 Contract Review	52
7.3 Purchase Requisitions, Purchase Orders & Invoices	53

7.4 Source Inspections 54

8.0 IDENTIFICATION & CONTROL OF MATERIALS, PARTS & COMPONENTS... 55

8.1 Containers 55
8.2 Package Materials 57
8.3 Analytical Calibration Standards 58

9.0 CONTROL OF PROCESS..... 59

9.1 Sample for Waste Analysis 59
9.2 Sample Selection & Collection 60
9.3 Certification Process 61
9.4 Shipping Process 65

10.0 INSPECTION..... 65

10.1 In-Process Inspections 65
10.2 Waste Certifying Function 67

11.0 TEST CONTROLS..... 67

11.1 Definition of Test 67
11.2 Analytical Test Controls 68
11.3 Traceability of Calibration Sources 70
11.4 Operational - Package Weight 70

12.0 CONTROL OF MEASURING & TEST EQUIPMENT..... 71

12.1 Calibration Schedules & Stickers 71
12.2 Environmental Controls for Measuring Equipment 72

13.0 HANDLING, STORAGE & SHIPPING..... 73

13.1 Not Adverse to Certification 73
13.2 Security 73
13.3 Fire Safety 74
13.4 ALARA 74
13.5 Compliance with Title 49 of the CFR 75

14.0 INSPECTION, TEST & OPERATIONAL STATUS..... 77

14.1 Calibration Sources 77
14.2 Preventive Maintenance 77

15.0 CONTROL OF NON-CONFORMING ITEMS..... 78

15.1 Control & Disposition of Non-Conformances 78
15.2 Special Tags & Labels 78
15.3 Segregation And/Or Removal From Operating Status 79
15.4 Documentation 79

16.0 CORRECTIVE ACTIONS..... 80

16.1 On Non-Conformance Items 80
16.2 Findings/Recommendations 80
16.3 Exceptions Approval From the DOE/NV Manager 81

17.0 QUALITY ASSURANCE RECORDS..... 81

18.0 AUDITS/WASTE CERTIFICATION..... 82

18.1 External 82
18.2 Internal 82

LIST OF FIGURES

Figure Number	Title of Figure	Page Number
1	FMPC Management and Waste Certification Organizations	84
2	Waste Processing Interface	85
2a	Waste Certification Packaging Flow Chart	86
3	Waste Processing Flow Chart Primary Material Flow, Analysis, Reports & Samples	87
4	Waste Processing Flow Chart Record Keeping & QA Surveillance	88
5	Low Level Waste Container Data Sheet	89
6	Sample Seal	90
7	Sample Label	91
8	Custody Transfer Record/Lab Work Request	92
9	Chain-Of-Custody Record	93
10	Quality Tag - Accepted	94
11	Quality Tag - Non-Conformance	95
12	Quality Tag - Hold for Inspection	96
13	Off-Site Loading - Tie Down Inspection - Vehicle Inspection	97

LIST OF TABLES

Table Number	Title of Tables	Page Number
1	Master Procedure	98
2	Archival Documents	102
3	Quality Assurance Records	103
4	Sample Material Identification & Control	104
5	Measuring & Test Equipment Calibration	105
6	Material Requiring Procurement Control	106
7	Specifications	107

EXECUTIVE SUMMARY

This waste certification program plan describes the procedures which are used by the Feed Materials Production Center (FMPC), Fernald, Ohio, to ensure that the low-level radioactive waste shipped to the Nevada Test Site (NTS) for disposal conforms with all pertinent federal, state, and local regulations. The FMPC is managed by Westinghouse Materials Company of Ohio (WMCO), for the U.S. Department of Energy (DOE). The FMPC serves an important role in DOE defense programs by employing a variety of chemical and metallurgical processes.

The production processes at the FMPC generate solid and liquid low-level radioactive wastes. The primary waste forms to be packaged and shipped are waste process residues, scrap wood & pallets, refuse metal, miscellaneous trash and construction rubble. The uranium content of these waste streams range from about 0.0005 to 0.87 g U/g of solids. The uranium content of solid uranium metal that may be shipped in the future can be as high as 1.00 g U/g of solids. The U235 isotopic content normally is 0.2% to 1.25%. The specific activity content of the wastes allows them to be classified as Limited Quantity (LQ), Reportable Quantity (RQ) or as Low Specific Activity (LSA) subject to the shipping regulations made in exclusive use vehicles.

This Waste Certification Program Plan (WCPP) plan is based primarily on the waste acceptance criteria established by NTS (NVO-325) and on the ANSI/ASME-NQA-1 national standard for QA programs to be applied to nuclear facilities. In addition, adherence to the QA program ensures compliance with applicable U.S. Department of Transportation (DOT), U.S. Nuclear Regulatory Commission (NRC), U.S. Environmental Protection Agency (EPA), and DOE regulations and orders. The document presents a brief description of the FMPC operations, waste generation, and applicable standards, regulations, and guidelines, and the QA measures concerning each of the 18 NQA-1 elements.

Nearly, all sections and departments at the FMPC are involved in the successful shipment of low-level radioactive waste (L-LRW). Waste Certifying Officials have been designated by the DOE Site Manager in an official letter. The L-LRW Certifying Official certifies that each waste container meets all applicable criteria and is accompanied by all necessary documentation before leaving the FMPC site. The FMPC contracts with approved carriers for shipment of the waste containers to NTS in accordance with DOE Order 1540.

The following is a summary of the NTS waste acceptance criteria to be met by FMPC. These criteria are discussed in more detail in Section 3.0.

Waste Form Criteria

1. Pyrophoric materials must be converted to a nonreactive form.

2. Explosive materials must be converted to a nonreactive form; no compressed gases, including unpunctured aerosol cans, will be accepted.

3. Free liquids will not be accepted.

4. Fine particulate radioactive waste shall be immobilized or double containerized; no more than 1 wt % of < 10 microns or 15 wt % of < 200 microns will be allowed.

5. Reportable quantities as defined in 40 CFR, hazardous wastes shall not be accepted.

6. Low Level Radioactive Waste shall have a Transuranic (TRU) nuclide concentration less than 222,000 dpm per gram (100 nanocuries per gram).

Waste Package Criteria

7. Quantity of fissile materials shall ensure that packages remain subcritical.

8. Quantity of radioactive materials should be limited so that effects of nuclear decay heat will not adversely affect physical or chemical stability of the package or its contents.

9. Radiation levels shall not exceed 200 millirem/hr on contact and 10 millirem/hr at 3 ft (1 m) during handling, shipment, and disposal.

10. Packages shall be contamination free (as per levels listed in 49 CFR 173.443) upon receipt at NTS.

11. Radioactivity limits in any one package shall conform to applicable regulations of Title 49 CFR 173.421 for LQ or 172.101 appendix 1 for RQ.

12. LSA requirements [49 CFR 173.425 (b)(1)] of strong tight containers shall be used to package the wastes, and shipments shall be made in exclusive-use vehicles. Bulk LLW shall be shipped in closed transport vehicles in accordance with Title 49 CFR 425 (c).

WASTE CERTIFICATION PROGRAM PLAN

1.0 ORGANIZATION

1.1 FMPC Management Organization

The Feed Materials Production Center (FMPC) is managed by the Westinghouse Materials Company of Ohio (WMCO) under contract to the Department of Energy (DOE). The certification, packaging and shipping of low-level radioactive waste at the FMPC involves numerous organizations. An overall WMCO organizational chart appears in Figure 1.

1.2 Specific Waste Management Organization

Responsibility for specific operations for low-level radioactive waste generation rests with Waste Management, Transportation, Materials Control & Accountability, Analytical Laboratories, Solid Waste Compliance, Radiological Safety and Quality Assurance. Figure 2 shows the waste processing interface and Figure 2a shows waste certification. Authorization to store or dispose of radioactive defense waste has been obtained by written approval from DOE-Nevada.

An FMPC waste generator initiates the waste disposal process by filling a Waste Management approved waste container. Once the container has been filled a sample is drawn. Analytical Laboratories then analyzes the sample for major radionuclide content and TCLP, as required. Solid Waste Compliance makes all RCRA determinations for waste based upon chemical analysis and/or process knowledge. Once analysis is complete and a RCRA determination has been made the waste container is prepared for final shipment by Waste Management. Radiological Safety monitors each waste container and the transport vehicle prior to shipment. Transportation prepares the vehicle for loading and loads the waste containers. Material Control & Accountability prepares the shipping order and the DOE-741 Nuclear Material Transfer form. Traffic of the Transportation Department prepares the Bill of Lading and makes all shipping arrangements. Waste Certification of the Quality Assurance Department monitors and evaluates each step of the waste process.

1.3 Waste Certification Organization

There are two certification groups. The Waste Packaging Quality Assurance Group has direct responsibility overview of waste packaging operations and package certification. Normally there are five certification personnel qualified to sign NV-211 labels. The QA Certification Group has overview responsibility for waste packaging certification, and is responsible for certification of each shipment. Within this group is a prime certification

official and normally three alternate certification officials, who are authorized to sign certification statements to certify shipments, and who can also certify waste packages by signing the NV-211 labels. The QA Certification Manager's overview of both groups ensures that only qualified and certified personnel approved by NV are utilized for certification.

Responsibility for specific operations for low level radioactive waste generation and processing rests with the Waste Generator, Waste Management, Transportation, Analytical, Materials Control & Accountability, Solid Waste Compliance and Quality Assurance. Waste Management manages waste generation, characterization, sampling, packaging and prepares waste shipments for disposal. Transportation moves waste at the FMPC, loads vehicles for shipment, inspects vehicles for shipment, completes and authorizes the waste manifest. Analytical performs all analysis at the FMPC, maintains documentation of analyses and controls activities with outside analytical laboratories as needed. Materials Control & Accountability prepares the shipping orders, DOE 741, factor assay, and controls process material flow documentation and nuclear accountability of FMPC material. Solid Waste Compliance performs mixed waste determination of FMPC waste. Quality Assurance overviews the waste process, performs surveillance of the waste process, maintains shipping/certification records, overviews shipping documentation and loading activities, and certifies waste for shipment for disposal at NTS. The Waste Certification organization chart appears in Figure 2a.

1.4 Waste Management Program Description

The waste process begins when the waste generator contacts the Waste Management Department for a waste container. Transportation supplies the waste container(s) to Waste Management for distribution to the waste generator who then packages their waste in accordance with applicable procedures.

After the waste is packaged and sampled, the waste generator notifies Transportation to transport the packaged waste to Waste Management. At Plant 1, Waste Management receives the waste, interim stores and prepares the containers for shipment. Containers are separated into individual shipments and temporarily stored on the Plant 1 pad awaiting shipping documentation. When documentation is complete, shipments are moved to the staging area where final shipment preparation and container certification documentation takes place. A waste processing flow chart appears in Figures 3 and 4.

1.4.1 Waste Generation, Processing & Packaging

There are 4 waste streams identified for disposal at NTS in compliance with NVO-325. The waste streams are as follows:

1. Process area wastes contaminated with less than 1% of uranium.

2. Construction wastes slightly contaminated with uranium.
3. Low grade nonrecoverable uranium residues equal to or greater than 1% and less than 20% of uranium.
4. High grade nonrecoverable uranium residues equal to or greater than 20% and up to 100% of uranium.

Numerous process area wastes contaminated with uranium are generated at the FMPC in conjunction with normal production related activities. These wastes have all been prepared and shipped to the Nevada Test Site in the past and include the following:

- Trash (plastic, cardboard, paper, etc.)
- Incinerator Ash
- Scrap Salts (high fluoride)
- Asphalt
- Floor Sweepings
- Scrap Drums
- Asbestos
- Refuse Metal
- Scrap Filters
- Pallets, Scrap Wood
- Ceramics, Glass
- Dust Collector Bags
- Furnace Cleanings (Rockwell)

These wastes may be packaged into drums, boxes (wood/metal), sea/land containers or nylon reinforced bags (baled trash).

Construction wastes slightly contaminated with uranium are generated at the FMPC in the demolition or excavation phase of a construction or maintenance project. Construction wastes may include the following:

- Soil
- Rocks, Gravel
- Metal
- Wood
- Asbestos
- Trash (plastic, cardboard, paper, etc.)
- Asphalt
- Glass

Construction wastes may be packaged into drums, boxes (wood/metal) and cargo containers.

Low grade and high grade nonrecoverable uranium residues are generated at the FMPC as a result of the production processes within the various plants. The difference between low grade residues and high grade residues is that the low grade residues generally contain less than 1% uranium by weight. Both low grade and high grade uranium residues are

classified as nonrecoverable or waste, if the total uranium and assay of the material falls below the FMPC economic discard curve for recovery.

One of the major nonrecoverable uranium residues is magnesium fluoride (MgF_2). MgF_2 is produced during the reduction process of uranium tetrafluoride with magnesium to uranium derby metal. The MgF_2 waste is packaged in 48-gallon drums using 55-gallon drums as overpacks. Due to declining uranium metal production requirements, however, the generation of this waste will be much lower in the future.

Slurries and residues from Plant 8 are processed through various equipment due to their wet/dry consistencies. Some of the dry waste materials are miscellaneous residues including scrap uranium tetrafluoride (UF_4) and black oxide (U_3O_8) which are packaged using the Rotex without a screen. Raffinate cake, sump cake and slag leach filter cake are dried in the Rotary Kiln or Primary Calciner and packaged from there. All of these are processed in Plant 8 and packaged into 48-gallon drums with 55-gallon drum overpacks. Various dust collector units at the FMPC, due to physical constraints, utilize a 24-gallon drum that is overpacked into a 30-gallon drum for double containment. In addition, 55-gallon drums of various dry low level waste residues are

overpacked directly into 83-gallon drums for shipment. In summary low and high grade uranium residues include the following:

Low Grade Uranium Residues:

- Discard process residues
- Incinerator Ash
- Scrap Salts (high fluoride)
- Trailer cakes
- Waste slurries (dried)
- Raffinate
- Sump cake
- Dust collector residues
- Filter cakes
- MgF_2

High Grade Uranium Residues:

- UF_4 (off-specification)
- Scrap U_3O_8
- Reject UO_3

No thorium residue waste streams have been approved for disposal at NTS to date. However, the FMPC has served as the DOE interim storage site for thorium contaminated materials since the 1970's. The thorium contaminated low level wastes are currently stored in the following:

- 48-55 gallon overpack drums
- 13,500 containers in warehouse buildings
- 241 containers overpacked in six-packs stored in Building 64
- some containers stored in quonset hut
- contaminated equipment at various site locations

Thorium contaminated low level wastes previously contained in the silo and bins have been repackaged into approximately 1600, 48-55 gallon overpack drums to meet double containment criteria and are ready for disposal at an approved DOE waste management facility. This material is presently stored in the quonset hut.

The drummed thorium contaminated low level waste in warehouse buildings is scheduled to be classified and overpacked into six-pack metal containers and foamed in place.

The transportation of these materials shall be conducted under the FMPC "Environmental Assessment of the Proposed Low Level Waste Processing and Shipment System." An Addendum to the "Environmental Assessment of the Proposed Low Level Waste Processing & Shipping System" has been developed to allow for the addition of shipments of low level waste containing thorium materials as the primary radionuclide.

A "Waste Stream Characterization Data Sheet" shall be completed and submitted to NTS for any waste streams initiated after the issuance of the NVO-325. This information shall be in accordance with 40 CFR 264.13 (a), "General Waste Analysis." Forecasts of waste volume, radioactive species, total curie content, copy of the analysis of a representative sample, number and type of packages, and number of shipments shall be provided to NTS and DOE/NV based upon the waste stream numbers to aid in planning for future waste shipments.

Any significant changes which occur to the generating or treatment processes of a waste stream shall be documented and DOE/NV and Reynolds Electrical & Engineering Co., Inc. (REECo) Defense Waste Management Department (DWMD) notified. The waste shall be recharacterized and certified. In addition, a semiannual recertification report for all waste streams shall be prepared. This report shall include:

- identification of waste by waste stream identification number

- update of the three-year forecast

- assurance that the Waste Certification Program Plan is presently followed and waste continues to meet NVO-325 requirements

- results of additional waste characterization performed on a routine basis or as a result of a change in the waste process. If there were no changes during a six month period then a statement to that effect shall be included.

All samples taken are drawn using U.S. EPA SW-846 methods. Uranium residues are sampled using open scoop, a slotted pipe and a sheathed or closed auger depending on the nature of the material. A sample is taken from each container of a lot and a bulk composite is then made per lot. The composite bulk sample obtained from each lot of material requires sample preparation, which may include drying, milling, blending, screening, pulverizing, and subsampling. The prepared sample is then submitted to the FMPC laboratory for percent uranium (or thorium) analysis and U-235 isotopic evaluation. Before a given sampling device or procedure can be finally accepted for sampling purposes, it is necessary

to evaluate the accuracy and precision of the method as it is used to sample a specific type of material. It is also desirable to provide periodic and/or continuous checks on the various sampling techniques. These evaluations may be accomplished in a number of ways.

Sampling of uranium (or thorium) solutions is accomplished by taking dip samples or removing a sample from a well-agitated storage tank using a liquid sampler. However, bulk solids sampling presents the greatest difficulty. Some of the various methods for evaluating sampling procedures are:

1) Duplicate sampling by identical procedures.

2) Dual sampling, using at least two different samplers.

3) Dilution of inert material with a known amount of standard oxide, and blending the mixture.

4) Process evaluation in which samples of questionable materials not amenable to sampling in their original state may be evaluated by comparison with samples taken of the processed or oxidized product once it is in a form suitable for sampling.

In all cases, analytical variance statistical techniques are used in determining the significance of differences between sampling tests.

Some materials, such as contaminated baled paper and solid metal, cannot be representatively sampled for percent uranium. These types of materials are assigned factor assays. These factor assays are based upon recovery campaigns, special studies, or process knowledge estimates.

Tentative assay values are used for materials routinely produced, until individual lot assays are performed by the NMC Analytical Laboratory. A complete factor and tentative assay list is issued as needed by MC&A for general use.

Any exemption requests which may have been included in the initial waste disposal application to NTS shall also be included in the recertification report. Changes or revisions to those initial exemption requests shall also be included if corrective action has occurred.

1.4.2 Waste Shipping

Waste containers are prepared for final shipment by Waste Management. Waste Management and Waste Certification visually check each container for significant damage such as dents, rust, holes, cracks, and defects. Rejected

containers are moved to designated areas for repair and/or repackaging. Final container closure such as nailing, banding or pinning occurs at the Waste Management designated staging area. A shipment number and a container identification number are assigned to each container which can be cross referenced to the FMPC "Lot Code and Color Marking System" for FMPC internal verification. Containers are closed for off-site shipment, radiological smear and survey tests are performed and documented prior to loading. All containers are visually inspected by Waste Certification and radiological smears and surveys reviewed for compliance by Waste Management and Waste Certification before the shipment is released for loading.

Special requirements for handling, storage, and shipping are detailed in Standard Operating Procedures (SOP's), department procedures, manufacturing specifications, and the Transportation Manual (see Table 1). The Transportation Section assigns personnel trained in the safe operation of fork lifts and transport vehicles for transfer of waste containers from packaging stations to temporary storage and also for loading trucks for shipment.

Containers (except cargo containers) are transferred from the storage area to the staging area. Waste containers shall be constructed so that they can be handled by fork lift. Containers are loaded and shored in a manner to

prevent shifting and to meet legal weight restrictions. Also, containers are loaded in such a way as to ensure that radiation exposure to the driver and the public conform with present Department of Transportation (DOT) regulations.

Some of the material designated as low-level radioactive waste and destined for NTS is classified as Low Specific Activity (LSA) as defined in 49 CFR 173.425 and is subject to the regulations thereof. Wastes also are classified as Limited Quantity (LQ) or Reportable Quantity (RQ). FMPC packaging of hazardous materials for shipment shall be in compliance with regulations contained in 49 CFR. However, DOT specification packages are not required for (LSA) waste shipped by exclusive vehicle excepted by 49 CFR 173.423, 173.424, and 173.425. These materials shall be packaged in strong, tight packages that will not leak during normal transportation and handling conditions.

For packages not meeting the standard DOT requirements, WMCO shall submit to DOE/NV drawings and/or safety analyses for their review and approval prior to use. Package design shall include all requirements detailed in the NVO-325.

Only properly evaluated and DOE-approved carriers are used for low level radioactive waste shipments to the Nevada Test Site (NTS) in compliance with DOE order 1540.1 "Materials Transportation and Traffic Management." The carrier will

comply with routing instructions and guidelines as specified in Title 49 CFR. A carrier/driver instruction packet is given to each driver prior to departure. This packet contains carrier/driver instructions for radioactive shipments, instructions regarding controls for radioactive shipments consigned as exclusive use, suggested routing through Las Vegas area, 49 CFR 171.15 and 171.16 notification procedures, DOE regional coordinating offices for radiological assistance and geographical areas of responsibility and a permit for the transportation of radioactive waste in Nevada.

1.5 Training of Packaging & Shipping Personnel

In compliance with NQA-1, NVO-325, 49 CFR Section 173.1(b), and DOE Order 5480.1A Chapter V, formal training of all personnel directly involved in the preparation of waste shipments shall be conducted. The training shall be documented, updated bi-annual, and available for inspection by any auditing official. The training program shall be designed as a number of performance based modules. Each module contains learning objectives, conditions, and an evaluation to measure the trainee's competence in performing required tasks. Certified instructors from applicable departments shall provide instruction to packaging and shipping personnel, maintain training records, and conduct an

bi-annual evaluation of the effectiveness of the training program. Permanent training records are maintained by the FMPC Development Section of the Human Resources Department.

The FMPC Transportation Section has an important part of the overall low level radioactive waste disposal training program. The Training Manual & Training Program (Training Source No. 2219-00000-8801) is used for personnel directly involved with off-site shipments. Also, a training program for operators exists for the safe operation of powered industrial trucks. This program is administered by a Traffic Section supervisor utilizing classroom instructions, demonstrations, and on-the-job training. The program consists of four phases: familiarization, operation, qualifications (written examination and performance tests), and nuclear safety.

2.0 WASTE CERTIFICATION PROGRAM PLAN

2.1 Quality Assurance Policy Statement - Responsibilities

This Waste Certification Program Plan and associated implementing procedures incorporate the WMCO policies for achieving or exceeding the required levels of quality for the packaging and shipment of waste to the Nevada Test Site (NTS) for disposal. These documents define a program which satisfies the requirements of DOE, DOT, and NTS.

The authority and responsibilities for the overall quality of the program rests with the President of WMCO. The responsibility for establishing, executing and evaluating the overall quality and waste certification program is assigned to the Vice President, Quality. Members of the President's staff are responsible for implementing the program in their organizations. Each employee is responsible for compliance with the requirements of this Waste Certification Program Plan and the implementing procedures as it applies to his/her work assignments. The organizational chart is shown in Figures 1, 2 and 2a.

2.2 Statement of Independence - Interface Control

All waste prior to shipment, is labeled with a NTS NV-211 sticker. The NV-211 is signed by a knowledgeable, responsible person who has been trained and qualified in accordance with the WCPP. This person certifies that the waste container and contents meet NVO-325 requirements. The Certification Official is responsible for assuring that each package certifier is properly trained and qualified. The Certification Official and certifiers are not involved in the actual packaging of waste. The Certification Official and certifiers are part of the Quality Department. The Vice President of Quality reports directly to the President, WMCO.

Waste packages and shipments are certified by trained and qualified personnel within the Quality Department, which is organizationally independent from groups directly involved in the

actual packaging and shipment of waste (see Appendix I, Section B for specific training requirements). In accordance with the WCPP, and FMPC Procedures QAP-6.11 and 6.12, the Manager of Site Quality Engineering, Quality Department, certifies that personnel are properly trained and qualified to certify waste packages, and shipments.

There are two certification groups. The Waste Packaging Quality Assurance Group has direct responsibility overview of waste packaging operations and package certification. Normally there are five certification personnel qualified to sign NV-211 labels. The QA Certification Group has overview responsibility for waste packaging certification, and is responsible for certification of each shipment. Within this group is a prime certification official and normally three alternate certification officials, who are authorized to sign certification statements to certify shipments, and who can also certify waste packages by signing the NV-211 labels. The QA Certification Manager's overview of both groups ensures that only qualified and certified personnel approved by NV are utilized for certification.

2.3 Waste Certification Program Description

The Waste Certification Program provides verification and documentation that waste packages, the materials contained therein, and all package labels and markings thereon comply with DOE, DOT, and NTS requirements as specified by NVO-325, latest revision, prior to shipment to the Nevada Test Site. Specific requirements regarding disposal of waste are issued by the WMCO Regulatory Compliance Section and are used by Waste Certification personnel as an additional control. Also, the loading and placarding of vehicles used in transport is verified to be in compliance with DOT regulations prior to release of any shipments.

Competent and trained individuals are employed in the packaging, marking, labeling, verification and certification process to provide and collect physical evidence of compliance. Trained and qualified certifiers are responsible for verifying that all waste packages are in compliance with all applicable requirements. The Certifier will be responsible for certifying each package for shipment to the NTS. The program empowers the Certification Official as an independent overview to withhold approval of shipment, and provides a means to address questions regarding disposition and corrective action via the use of Disposition and Corrective Action Reports.

2.4 Qualification of Waste Certification Personnel

Personnel performing certification work are selected and assigned work based upon work experience and training. Formal training includes attending Transportation, Waste Management, Solid Waste Compliance, and Quality procedures training courses that are offered by WMCO. Based upon need and application to work performed, attendance at selected training seminars is required.

2.5 Qualification of Waste Certification Official(s)

Waste certification officials are required to have a working knowledge of applicable regulations and procedures, and to be familiar with prohibited and nonprohibited waste materials, and their chemical constituents. Experience and ongoing training in environmental compliance and DOT regulations is required. This training is accomplished through attendance at DOE sponsored courses as well as other agency courses.

3.0 DESIGN CONTROL

3.1 Design of Waste Certification Process

At the present time, no actual design work relating to the waste certification process is in progress. However, when a design change is required, a revision conforming to the FMPC-2139, WMCO/FMPC QA Plan, Section 3, "Design Control" will be followed.

To assure waste determination each generator must initiate an "Low Level Waste Container Data Sheet FMPC-REST-3236 (see Figure 5). This form verifies the container is empty before filling and that the container is filled with only the waste so specified. When the container is filled the form is completed and signed by the generator. The signed form is sent to QA Waste Certification as a permanent record.

Processes that directly affect the certification of the waste material shall be performed in accordance with written procedures or instructions (see Table 1). Assurance that current SOP's are being followed shall be ensured by internal audits and surveillances. Data from analyses and sample results offer a secondary assurance of conformance and shall be collected and kept for recorded evidence of verification of the processes.

A performance-based in-house training program shall be utilized to train personnel involved in waste processing. This will ensure that supervision and operating staff have the necessary skills to prepare waste for shipment.

3.1.1 Waste materials shall not be mixed with other waste or materials which could cause any harmful effects such as heat or pressure, fire or explosion, toxic dusts, fumes, or gases or flammable fumes or gases. (40 CFR 265 Appendix V) Compatibility determinations are based on analytical data and/or process knowledge. The type of waste container

selected to hold any waste is compatible with the respective waste and approved by the Department of Transportation (49 CFR 172.101).

3.2 Waste Form Processing For Compliance

The Operational Defense Waste Management Plan for the Nevada Test Site, NVO-325 and DOE Order 5700.6B establishes procedures and criteria for the safe shipping, receiving, processing, disposal, and storage of radioactive defense waste at NTS. These criteria are based on current low level radioactive waste management practices and guidelines (DOE Order 5820.2A). The quality assurance guidelines of DOE Order 5700.6A and ANSI/ASME NQA-1 have also been incorporated in to the Site Quality Assurance Plan, FMPC-2139. All work is performed in accordance with this plan. The NTS waste acceptance criteria and how the FMPC plans to ensure that the waste containers meet these criteria are detailed in the following subsections.

3.2.1 Material intended for shipment to NTS will be basically in the forms listed in Section 1.4.1. The chemical composition of all the process waste forms consists of inorganic salts and, is not combustible.

3.2.2 Explosive materials shall be converted to nonreactive forms. Compressed gases, including unpunctured aerosol cans, shall not be sent to NTS for disposal.

The waste forms as described in Section 1.4.1 apply here and, again, the material is both nonpyrophoric and nonexplosive as contained in the containers. Supervisory control, the use of SOP's, and checklists shall ensure that all material shall have gone through the processes and shall have met the criteria.

3.2.3 All waste shall be controlled to prevent any free liquids. Waste streams such as slurries and residues which have wet consistencies are processed in the Rotary Kiln and/or Calciner to remove excess liquid before packaging. These materials are not hygroscopic and remain as prepared. The MgF_2 slag leach slurry is filtered through a bed of diatomaceous earth and dried under vacuum. This waste is then kiln dried or calcined to ensure that it does not contain any free liquid. Remaining waste streams that could contain free liquids are treated by adding absorbent during the packaging process.

3.2.4 Fine particulate waste shall be immobilized so that the waste package contains no more than one weight percent of less-than-10-micrometer-diameter, or 15 weight percent of less-than-200-micrometer-diameter particles with radioactive contamination. Any waste in this category shall be routinely treated with a dust suppressant during packaging to prevent dispersal of fine powder in the event of a breached container.

One waste, MgF_2, can not have a dust suppressant added due to a reaction with water in the dust suppressant causing hydrogen generation. Permission has been obtained from NTS to double package this material as an alternative means of minimizing any potential release of fine particulates. Any other material falling into this category shall be treated in the same manner and permission obtained from NTS as needed.

3.2.5 Waste contained in the low level radioactive waste packages shall contain no radioactive waste mixed with hazardous waste as identified in 40 CFR-261. The SOP's detail the addition of all chemicals, and the checklists verify the addition of each. Tests on representative samples have shown no hazardous materials present.

3.2.6 The four principle wastes as described in Section 1.4.1 are nonreactive with the shipping containers. Other waste components are uncalcined diatomaceous earth or materials that have been oxidized in air.

All waste is segregated by material type and compatibility at the FMPC at the point of generation. The new FMPC-REST-3236 form (see Figure 5) signed and completed for each waste container serves as a documented check. It

shall be implemented by late 1990. Containers and/or dumpsters, if possible, are closed and/or locked while unattended.

3.2.7 Low Level Radioactive waste analysis shall verify all wastes destined to the NTS for disposal shall have a Transuranic (TRU) nuclide concentration less than 222,000 dpm per gram (100 nanocuries per gram).

3.2.8 LLW containing pathogens, infectious wastes, or other etiologic agents as defined in Title 49 CFR 173.386 is segregated at the point of generation for incineration and will not be sent to the NTS for disposal (Table 1).

3.2.9 Bulk LLW shall be solid and meet the requirements of Title 49 CFR 173.425 (c)(1). (Table 1).

Old, stored waste forms will be handled in much the same manner as newly generated waste except that these wastes are controlled and handled only by Waste Management. A waste characterization shall be performed to determine major radionuclide content and a RCRA determination, if not previously done. After characterization is complete and the waste form meets NVO-325 requirements as stated above, the waste shall be repackaged or overpacked for shipment and disposal to meet NVO-325 packaging requirements and DOT transport regulations.

3.3 Waste Packaging Processing for Compliance

Waste packaging criteria for low-level waste shipped to the NTS for disposal shall meet DOT regulations, 49 CFR 173, Subpart I. Standard operating procedures listed in Table 1 concerning storage and off-site shipments shall be used to assure that all shipments meet DOT requirements.

3.3.1 In compliance with 49 CFR 173.451, Fissile Materials, process residues are routinely sampled by process lot and analyzed for percent uranium and percent uranium-235. Standard Operating Procedures (Table 1) detail the frequency and specific analysis to be performed on each container of material.

External radiation levels of each waste package are measured using calibrated instruments for determination of compliance, and calculation of the transport index when required by 49 CFR 173.455.

Analysis has shown that MgF_2 waste material from the depleted or natural uranium metal production lines contains approximately 1 to 5% uranium. The filter cake produced by leaching and filtering MgF_2 from the enriched uranium line contains approximately 0.1% uranium. Calculations using these values indicated that the normal or depleted material would contain 0.003 g/kg of uranium. The depleted or normal

containers do not pose any danger of criticality even with 0.050 g/kg of normal or depleted uranium, and the 0.003 g/kg of the enriched uranium is insufficient material for criticality even at optimum configuration. Standard operating procedures (Table 1) detail the frequency and specific analysis to be performed on each container of material.

3.3.2 In compliance with 49 CFR 173.442, Thermal Limitations, the heat generated by the quantity of ^{235}U in any one of the containers (max 0.4 kg) is far less than 0.1 W. This calculation is based on 2.15×10^{-6} Ci/g and a heat output of 0.027 W/Ci. For the ^{238}U the Ci/g value is 3.34×10^{-7}; therefore, even 0.050 g/kg of uranium would still produce <0.1 W.

3.3.3 In compliance with 49 CFR 173.441, Radiation Levels, the radiation exposure rate at the surface and at 1 m of each package shall be measured and recorded in the data package. Packages that exceed 200 millirem/hr on contact and/or 10 millirem/hr at 1 m shall not be shipped to NTS.

3.3.4 In compliance with 49 CFR 173.443, the surface contamination of each container shall be measured using instruments calibrated by the OS&H Dosimetry & Instrumentation Section and recorded in the data package. If these instruments indicate that the limits of 49 CFR 173.443 are exceeded,

then the package shall be cleaned until it is within the limits or the contents shall be transferred to a clean container.

3.3.5 In compliance with 49 CFR 173.423, shipments of limited quantities (LQ) of radioactive materials, the quantity of radioactivity in any one package shall be less than the limits for Low Specific Activity (LSA) material shipped under exclusive use transport (49 CFR 173.421 and 173.422 criteria). Shipments of LSA shall meet the specifications of 49 CFR 173.425. Each waste material package labeled LQ meets the specifications of 49 CFR 173.421.

In compliance with Title 49 CFR 173.421 and 173.425, strong, tight containers used for shipping limited quantities of Low Level Waste (LLW) and LSA shall be constructed so that it will not leak during normal transportation and handling conditions. Any bulk LLW shall be shipped in closed transport vehicles unless an exception has been approved by NTS in accordance with Title 49 CFR 425(c). Containment of bulk waste shall be such that offloading personnel can unload the waste without contaminating personnel or equipment.

3.3.6 The FMPC shall package all waste for shipment to NTS in containers meeting DOT specifications (e.g., 17H 55-gallon drums or other NTS approved containers). All containers shall be shipped to meet DOT requirements for interstate travel and shall meet the requirements of 49 CFR 173.411, 173.425 and 173.412. (FMPC SOP TRF-46C-110, Table 1).

3.3.7 Waste shipped to the NTS shall be marked and labeled as required in Title 49 CFR 172, Subparts D and E [with exceptions noted in Title 173.425 (b) and (c)]. Also each waste container shall be marked with a unique container identification number and shipment number so that the container can be identified from another container within the shipment or from another set of containers.

4.0 PROCUREMENT DOCUMENT CONTROL

The Procurement Document package is prepared by requisitioners/users and includes drawings, specifications, and quality requirements for suppliers of critical items, such as waste shipping containers. The document packages are reviewed by Quality, Safety and Procurement Departments to assure that specifications are complete, appropriate Quality Level assignments are made, and that quality requirements are included that correspond to the Quality Level assigned for the procurement.

Quality provides Procurement with recommended supplier lists that are generated based on Quality Assurance supplier surveillance activity and performance on prior contracts.

Critical characteristics for inspection are identified during Quality review of the specification documents with a cognizant engineer representing the requisitioner/user of the items being procured, and an Inspection Plan is prepared. The Inspection Plan is used by Quality during surveillance activity conducted at supplier's facilities in the fabrication of the items being procured. Surveillance activity at supplier's facilities is used to verify compliance with the Procurement Contract requirements and eliminate receipt and isolation of non-conforming items at the FMPC. Receiving Inspection for waste shipping containers is performed by Operations Quality. The prearranged Inspection Plan is used for this function. Acceptable items are released for use. Non-conforming items, identified during FMPC Receiving Inspection, are isolated, red-tagged and dispositioned based on approved Deviation/Corrective Action reports.

Traceability is maintained for the Procurement Document Control activities for the critical items listed in Table 6.

5.0 INSTRUCTIONS, PROCEDURES & DRAWINGS

5.1 Procedures for Waste Generation, Segregation, Packaging & Shipping

When a waste operation process is in the development state, qualification of the new or revised process shall be achieved in accordance with the documented "Plant Test Authorization," (FMPC 720, Site Procedure). Results of the development and a record of the changes to the process will be documented by the Test Coordinator in a "Plant Test Authorization" completion report.

The implementation of production procedures after development, for waste generation, segregation, packaging, and shipping must be routed and approved by all departments involved in the process. Procedures are approved by the applicable department managers. The approvals verify that particular control requirements applicable to the procedure have been satisfied and that the designated individual certifies that the procedure is acceptable for its intended use. Understanding and acceptance are indicated by the signature(s) and the date(s) on the procedure.

The release and distribution of procedures and changes thereto are controlled by the Procedure Documentation & Integration Control (PD&IC) Group. The PD&IC Group is also responsible for directing the user to dispose of applicable procedures.

Some procedures are routed and controlled within each individual department (e.g., Quality and Radiological Safety). These procedures are approved by the responsible department manager, and are controlled and released by the applicable department.

5.2 Analytical Procedures

All samples taken are drawn using U.S. EPA SW-846 methods. Uranium residues are sampled using open scoop, a slotted pipe and a sheathed or closed auger depending on the nature of the material. A sample is taken from each container of a lot and a bulk composite is then made per lot. The composite bulk sample obtained from each lot of material requires sample preparation, which may include drying, milling, blending, screening, pulverizing, and subsampling. The prepared sample is then submitted to the FMPC laboratory for percent uranium (or thorium) analysis and U-235 isotopic evaluation. Before a given sampling device or procedure can be finally accepted for sampling purposes, it is necessary to evaluate the accuracy and precision of the method as it is used to sample a specific type of material. It is also desirable to provide periodic and/or continuous checks on the various sampling techniques. These evaluations may be accomplished in a number of ways.

Sampling of uranium (or thorium) solutions is accomplished by taking dip samples or removing a sample from a well-agitated storage tank using a liquid sampler. However, bulk solids sampling presents the greatest difficulty. Some of the various methods for evaluating sampling procedures are:

1) Duplicate sampling by identical procedures.

2) Dual sampling, using at least two different samplers.

3) Dilution of inert material with a known amount of standard oxide, and blending the mixture.

4) Process evaluation in which samples of questionable materials not amenable to sampling in their original state may be evaluated by comparison with samples taken of the processed or oxidized product once it is in a form suitable for sampling.

In all cases, analytical variance statistical techniques are used in determining the significance of differences between sampling tests. Sample results are tabulated and sent to the Material Control & Accountability (MC&A) Section and the requester.

Some materials, such as contaminated baled paper and solid metal, cannot be representatively sampled for percent uranium. These types of materials are assigned factor assays. These factor assays are based upon recovery campaigns, special studies, or process knowledge estimates.

Tentative assay values are used for materials routinely produced, until individual lot assays are performed by the NMC Analytical Laboratory. A complete factor and tentative assay list is issued as needed by MC&A for general use.

FMPC performs radiological chemical assay on uranium bearing materials. Uranium does not generate significant quantities of thermal energy therefore thermal energy requirements do not apply to FMPC materials. The MC&A Section calculates element and isotopic content by weight and activity (curies). The necessary release documentation for off-site shipment is then prepared. All process residues prepared for off-site disposal are sampled and analysis performed in accordance with approved Analytical Laboratory methods. Waste materials not amenable to representative sampling are assigned factor assays based on recovery campaigns performed periodically.

In order to determine if a reportable quantity of hazardous waste is contained therein the FMPC analyzes all waste streams. The FMPC has characterized on-site waste streams, pursuant to the requirements set forth in 40 CFR 262.11(c)(2) and OAC 3745-52-11(D), by applying knowledge of the hazard characteristic of the waste in light of the materials or the processes used. Further characterization has been conducted on the majority of FMPC waste streams through confirmatory sampling and analyses.

Solids (cakes or sludges) wastes were sampled for hazardous waste determination according to the U.S. EPA method as described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (SW-846), and according to the FMPC procedure ESH-P-52-019, entitled "SOP-Sampling Methodology of Waste Materials for RCRA Constituents."

The hazardous waste determination performed on FMPC waste follows a strict chain-of-custody protocol for collected samples. Chain-of-custody accounts for the transfer of each sample from collection through delivery to the laboratory. Following collection of the samples for hazardous determination, the lids on the containers shall be securely fastened, and proper chain-of-custody documentation prepared (See Figures 8 & 9).

5.3 Sample Custody

Routine samples of process waste collected while packaging are accompanied by an "Analytical Laboratory Sample Seal," "Analytical Laboratory Sample Label," and a "Chain of Custody Record," FMPC-PRO-3112, (Figures 6 , 7 and 9). These forms are completed by the requester, who retains a copy and forwards the form and samples to the analytical lab. Tests for TCLP are run on waste samples as requested and at every 50th lot sample as an on-going verification. Results are sent to the Solid Waste Compliance and Materials Control & Accountability Sections and the requester. Sample materials are identified in Table 4.

Wet/dry residue samples for percent uranium are returned to the waste steam for disposal. The Chain of Custody Record is kept for three years by the sample receiving laboratory. The Communications Services Group/Records maintains the Chain of Custody Record and analyses reports for an indefinite period of time. Figure 3 shows flow chart of analysis reports and samples.

Sample determinations for hazardous materials following EPA (SW-846) protocols require chain-of-custody documentation to accompany the samples. Figure 8 and 9 shows these FMPC forms.

5.4 Drawings - Facilities, Process Equipment, & Forms Control

Documents (plans, drawings, specification, procedures, instructions) that establish the waste process and the integrity of the waste container and its contents shall be controlled and maintained for a period of 20 years. Changes to these documents are initiated, reviewed, and approved by the same department/section that originated and approved the controlled documents. Table 2 and 3 identifies the documents to be controlled.

Each process or waste lot or batch is accounted for by item number, net weight, element weight and isotopic weight, which are the result of actual measurements. The movement of material from one location is strictly controlled by MC&A and must be authorized in advance. Physical inventory is taken and recorded annually. All accounting records are maintained in computer data bases. Also, composite samples are taken per lot during the waste and production processes to verify isotopic and percent Uranium, radiological and/or EP toxicity. At the end of each shift Production Activity forms are given to the supervisor who transfers the forms to Materials Control & Accountability(MC&A) personnel.

5.5 Inspection & Certification Procedures

Inspection and certification activities shall be identified on documents traceable to the items, inspected or certified. Table 1 lists the procedure in which receiving inspection activities are documented. (WMCO-QAP-14.01 Receiving, Inspection)

Certification procedures are listed in Table 1 under the Quality Assurance section.

5.6 Procedures For Keeping Pertinent Regulations Up-To-Date

Compliance documents, federal and state regulations are ordered annually by subscription through the Technical library with approval by DOE. [Procedure for Obtaining New Library Materials (TS:RHG:88-003)]. Current regulations are maintained in the library and the Code of Federal Regulations are maintained in the Legal library. Other WMCO departments must request copies of regulatory documents through the Technical library. A list of waste processing specifications appear in Table 7.

All procedures and manuals (including this document) are reviewed by the responsible departments on a periodic basis and revised as required.

Solid Waste Compliance initiates and routes new regulatory requirements to Waste Management and other generators in a Solid Waste Compliance document titled "Regulatory Compliance Guide" and/or management notification by memorandum.

6.0 DOCUMENT CONTROL

6.1 Waste Certification Program Plan

The Waste Certification Program Plan (WCPP) shall be controlled with unique numbers and can be identified on a controlled master list (maintained by Waste Management) so that the number designating the current issue can be quickly and easily checked to ensure that the most up-to-date version of a document is used. This list is updated on a periodic basis as the document(s) are changed and reissued. DOE/NV and REECo shall be issued a control copy of the WCPP and revisions when issued shall be submitted to DOE/NV and REECo for review.

6.2 Document Preparation, Review, Approval & Issuance

Document preparation, review, approval and issuance is controlled by the Procedure Documentation & Integration Control of the Quality Department. Initial document preparation is handled by a designated "Production Technical Representative" (PTR) responsible for the technical content of a specific area who evaluates and prepares all "Changes in Operation" (CIO's) and procedures. The

responsible "PTR" follows the document through the review cycle to issuance. A document is submitted to the PD&IC Group by the PTR accompanied by a procedure/CIO request form. The document undergoes review cycles by applicable department managers. Issuance of a document occurs when the initiating department manager authorizes it by signature. An issued document is controlled and distributed to all applicable departments by the PD&IC Group.

Some non-production departmental procedures (e.g., Quality and Radiological Safety) are prepared, reviewed, approved and issued by the responsible department(s). Document preparation is handled by a designated individual who is responsible for the technical content. This individual is also responsible for any changes required by the review cycle.

The controlled documents are maintained as stated in 6.1. Table 2 identifies the documents to be controlled.

7.0 CONTROL OF PURCHASED ITEMS & SERVICES

7.1 Receipt Inspection

All shipping containers are initially reviewed upon receipt at WMCO for visible damage and completeness of the shipping order. The Quality Department is responsible to perform receipt inspection of items as required. All inspections are documented on an inspection form which contains the acceptance requirements. All items found to be acceptable are so tagged and released for use. (Figures 10, 11, and 12). Items found to be nonconforming are tagged as such and a nonconformance report issued (see section 15.0). In addition, containers are reviewed by QA at the supplier facility prior to shipment to WMCO.

7.2 Contract Review

Review of contract and supplier submittal is performed by Quality Assurance, the requisitioner and Procurement & Contracts Sections. In addition, Quality conducts periodic supplier surveillances, as applicable, of their fabrication, inspection, test activities, and shipping based on the importance and complexity of the item and is imposed in the purchase order as a WMCO option. Also during the course of the procurement process the documents generated by the supplier are developed and submitted for approval by WMCO. The

requisitioner, Procurement & Contracts and Quality may witness supplier activities, if deemed necessary. Controlled items are listed in Table 6.

7.3 Purchase Requisitions, Purchase Orders & Invoices

A purchase requisition package is initiated by requisitioners/users of the items to be procured which includes drawings, written specification and quality requirements for FMPC suppliers. The requisitioner/user applies a quality level numerical indicator to the requisition package and the package is reviewed and approved by Quality Assurance and Safety prior to receipt by Procurement for processing.

The FMPC Quality Assurance Program provides a grade level system to indicate the appropriate management system controls to be imposed in order to assure conformance to applicable quality requirements. Quality levels are defined and guidelines are provided for matching quality requirements to quality levels in Site Procedure FMPC-711. Quality levels are assigned, based on a risk assessment of the consequence and probability of a failure. Instructions for performing a risk assessment and a matrix for determining the appropriate quality level assignment are provided in Site Procedure FMPC-712.

The approved requisition package is Procurement's authority to initiate the procurement process. Procurement evaluates and selects suppliers based on suggested suppliers identified on the requisition by the requisitioning party, recommended suppliers lists from Quality Assurance, and evaluations made from bid/proposal responses solicited from potential suppliers. Based on these evaluations, Procurement issues a purchase order to the selected supplier. The purchase order is the contract agreement between FMPC Procurement and the supplier.

Procurement maintains a database for purchase order information. Receiving information is entered into the Procurement purchase order database direct by FMPC Receiving people. Receiving people can access the database for entry of receiving information or pricing. Critical items, as listed in Table 6, are then moved into the Receiving Inspection area for inspection by Operations Quality.

7.4 Source Inspections

Supplier inspection of containers, assay systems, and instruments is witnessed by Quality and Procurement Contracts Sections. Surveillance of suppliers is planned and performed during material processing to assure the supplier satisfactorily performs the fabrication, inspection, and testing prior to shipping according to purchase order requirements. Surveillance activities including supplier discrepancies and audit results are documented.

8.0 IDENTIFICATION & CONTROL OF MATERIALS, PARTS & COMPONENTS

8.1 Containers

All containers used for shipment to NTS shall be properly designed to reduce the chance of radiological or occupational safety occurrences during transportation, handling, and disposal operations. The size and load of each container shall be controlled to ensure the minimization of the number of waste shipments to NTS and the space required for disposal (Table 1).

8.1.1 Container closure shall be sturdy enough that it will not be breached under normal conditions and will not serve as a weak point for container failure.

8.1.2 Except for waste packaged in steel drums, the waste container and contents shall be capable of supporting a uniformly distributed load of 4,000 lbs/ft^2 (19500 kg/m^2). This is required to support other waste containers and earth cover without crushing during stacking and covering operations at the NTS. Exceptions to this shall be outlined as specified in NVO-325.

8.1.3 All waste packages shall have permanently attached skids, cleats, offset, rings, handles, or other auxiliary lifting devices to allow handling by means of forklifts, cranes, or similar handling equipment. Lifting rings and other auxiliary lifting devices shall be recessed, offset, or hinged in such a manner that does not inhibit stacking the containers. The lifting devices shall be designed to a 5:1 safety factor based on the ultimate strength of the material. All rigging devices that are not permanently attached to the waste container shall have a current load test based on 125 percent of the safe working load.

8.1.4 All waste containers shall be sized to allow optimum stacking efficiency for disposal at NTS. Any exceptions to the NTS specified container dimensions shall be submitted to DOE/NV for written approval.

8.1.5 In addition to the weight limits set for specific packaging designs, boxes shall be limited to 9,000 pounds and 55-gallon drums shall be limited to 1,200 pounds. Containers exceeding 9,000 pounds approved for shipment to NTS shall be shipped in removable-top trailers for easy crane removal.

8.1.6 Waste containers shall be loaded to ensure that the interior volume is as efficiently and compactly loaded as practical.

8.1.7 All waste containers shall meet the requirements of Title 40 CFR 264, Subpart I, "Use and Management of Container." Each container shall be prepared for shipment so as to minimize damage during transit. Preshipment storage areas shall be controlled to avoid adverse influence from weather or other factors on the containment capability of the waste during handling, storage, and transport. All reasonable precautions shall be taken to preclude the accumulation of moisture on or in containers prior to their arrival at the NTS.

8.2 Package Materials

Package materials are maintained and controlled in FMPC Stores area (stock room). Each item is numbered and cataloged. Daily computer print outs show maximum/minimum levels of items for reorder as necessary. Economic Order Quantity (EOQ) calculations to determine annual usage are performed on items which are not needed as often.

Filled waste containers are marked in accordance with the FMPC "Lot Code & Color Marking System." This code system identifies the waste material and the source. The system utilizes a 15-digit number consisting of production order number, originating source, enrichment code, material description, and sequence number.

The production number is "W" followed by 3-digits indicating the on-site generating plant's estimate of the highest enrichment associated with non-recoverable contaminated waste materials. The source is a 3-digit code representing the generating plant and/or area where the material was generated. The enrichment code is 1-digit, the letter "P" is used for depleted waste (≤ 0.7.10% U-235), the letter "V" is used for enriched uranium (≥ 0.712% U-235) and the letter "N" for normal uranium which is considered 0.7.11% U-235. Material description is 3-digits (003) for non-recoverable waste. The sequence number is 4-digits which includes the product lot number (October 1985 = 286) preceded by a numeric code that represents the category of waste material.

8.3 Analytical Calibration Standards

Primary reference standards are obtained from the National Bureau of Standards or other reliable sources. Secondary reference standards are traceable to primary standard or compared to a primary standard within the FMPC Analytical Laboratories, if available. If not, a standardized production material must be used. The Analytical Laboratories standardizes a production

material by analyzing it using a method of higher precision and accuracy than the method to be monitored. Another way the Analytical Lab standardizes a production material is to analyze it by more than one method. In either case, multiple measurements are taken over a period of time. A reliable average value of the material is established by analyzing it a minimum of 25 times on successive days. Preparation of secondary standards within the Analytical Lab are per approved documented procedures. Documentation of the preparation of secondary standards is complete and accurate.

9.0 CONTROL OF PROCESS

9.1 Sample For Waste Analysis

Process waste samples are collected twice per day by Transportation and delivered to the Analytical laboratory. Samples of soil are taken and delivered to the lab for analyses as approved by the Solid Waste Compliance Section. Materials Control & Accountability calculates a factor assay to estimate percent uranium on some waste for which representative samples can not be obtained, such as contaminated concrete and wood.

A chain of custody for laboratory samples is presently being used (Figure 9). Figure 3 shows the flow chart of samples and analysis reports.

9.2 Sample Selection & Collection

Waste acceptance criteria are incorporated by each department (e.g. Waste Management, Quality, Radiological Safety, Transportation etc.) into established procedures for the safe processing of radioactive defense wastes based upon current low level waste practices and guidelines (DOE Order 5820.2). Quality assurance guidelines of DOE Order 5700.6A and ANSI/NQA-1 are incorporated into the FMPC waste processing system. Specific NTS waste acceptance criteria and how FMPC meets the criteria is addressed in Section 3.2 and Figure 3 of this plan.

All low level radioactive waste destined for off-site disposal at NTS shall meet DOT regulations (49 CFR 173, Subpart I). Standard operating procedures listed in Table 1 concerning storage and off-site shipments shall be used to assure that all shipments meet DOT requirements. Packaging shall be consistent with 49 CFR requirements and NVO-325.

9.2.1 Nuclear Safety

The quantity of fissile materials within a package shall be limited so that an infinite array of such packages will remain subcritical, even with close water reflection on all sides. This quantity shall be determined on the basis of a specific nuclear safety analysis, considering credible accident situations, and taking into account the actual materials in the waste (49 CFR 173.451, Section 3.3.1).

9.3 Certification Process

9.3.1 The certification process is designed to "certify" that each waste package meets all applicable criteria and is accompanied by all necessary documentation before leaving the FMPC site. Figure 3 shows a flow chart of record keeping activities. Waste certification begins with the generator, who is responsible for the waste until the container is transferred to Waste Management. The generator's signature on an FMPC-ES&H-1945-XX forms provides documented verification that the waste is as described and contains no prohibited materials. A portion of this form will be replaced prior to January 1, 1991, by FMPC-REST-3236 (Figure 5) which will provide better documentation of the verification checks and controls used to certify each waste package.

Both forms require completion and signature of the person packaging, or observing the packaging of waste, which can be an hourly or salaried person. The approval of the form shall always be a responsible salaried person. Certification personnel from the Certification Group, or designees from the Quality Department periodically witness the container filling. Each container is given a lot code number, container identification and shipment number by

Waste Management. Transportation Department transfers the containers to Waste Management for final shipment preparation.

The Project Quality Assurance Group, Quality Department, provides routine verification of packaging of construction rubble generated by subcontractors on site. Each container generated from whatever source has a unique identification to provide traceability.

Waste Management, who is also a generator, prepares packages for shipment, collects information on the packages in each shipment and presents this to the Waste Packaging Quality Assurance for review. This paperwork package includes the Storage & Disposal Data Report and Tally Sheet that is forwarded to NTS with each shipment. The waste packages for the respective shipments are then staged by Waste Management for examination and certification. During subsequent loading by Transportation, they are re-examined by Waste Packaging Quality Assurance to ensure that no damage occurs between certification and shipment. Transport vehicles are examined by Waste Packaging Quality Assurance prior to and after loading. Transportation also checks the vehicles and the loading of the shipments.

The QA Certification Group provides the Waste Packaging Certification Group direction and information relative to the certification process based on information obtained from various sources. Within WMCO, considerable reliance is placed on Solid Waste Compliance for proper characterization of waste; Analytical for analytical results of materials characterized and shipped; and Materials Control & Accountability for material control and product information, and for formulation of factor assay analyses. The certification process utilizes the expertise of all pertinent organizations to the extent necessary to provide an authoritative basis for certification. All information obtained is related to the wastes of concern by a suitable reference identification and other source information such as material descriptions are utilized as needed.

The QA Certification Manager, who is also a qualified certification official, exercises authority over all certification officials who are authorized to certify waste packages and shipments. Certification officials overview waste packaging and shipment activities, and either directly or indirectly verify the adequacy and authenticity of documentation of certification. Based on their evaluation, certification is made or withheld. Re-evaluation and changes in decisions are possible based on additional information providing there is valid technical justification for change. Deviation and Corrective Action Reports

document disposition of nonconformances and technical justification of acceptance. This provided disposition requires evaluation by a Quality Assurance evaluator, and nonconformances that do not meet requirements for shipment are unacceptable.

QA Certification provides control of materials shipped through an approval and certification process. The approval of a Certification Official is required for the Storage & Disposal Date Report that is required for each shipment. The Shipping Order and certification statement require approval signatures of a Certification Official before a shipment is released. Once this approval is complete, Traffic is responsible for final release and arrangement for transport of the waste shipments. They provide notification to NTS of estimated arrival times, change in schedules, and other Traffic related matters.

9.3.2 The completed NV-211 certification label shall be affixed (by certification personnel) to each acceptable container designated for shipment to the NTS. This label signed (legibly handwritten not stamped) by a trained and qualified certifier certifies that the package is in accordance with U.S. DOT and DOE/NV requirements.

9.4 Shipping Process- Manifest, Labeling, Placarding, Weighing, and Loading

All radioactive waste shipments consigned to NTS shall be made in accordance with applicable DOT hazardous materials regulations and DOE/NV requirements. Placarding shall be in compliance with 49 CFR 172, Subpart F.

WMCO shall recommend that the driver refrain from unnecessary stops, such as yard layovers, until the waste shipment is delivered to NTS. Special requirements for the manifest, labeling, placarding, weighing and loading are detailed in SOP-TRF-46-C-110 and the FMPC-2089 Topical Manual.

10.0 INSPECTION

10.1 In-Process Inspections

In-process inspections/reviews of identified waste operations processes are met through procedures and checklists. FMPC acceptance standards are:

- No damage of containers during in-plant transfer
- Proper labeling on exterior of container (NV-211 & Radioactive LSA/LQ/RQ labels)
- Proper markings on exterior of containers, including gross weight (49 CFR 172.310a), shipment number and "FMPC"

- Integrity of container liner
- Waste material sufficiently dry
- Proper seating & tightening of container lid & closure to specifications
- Contamination readings on exterior of drum
- Radiation reading at specified points
- Collection of data sheets & availability for shipping.

Inspection of the equipment (e.g., high level probes, pH probes, temperature gauges, temperature controllers and gas valves) used in the waste filling stations shall be on a weekly, monthly, quarterly and yearly basis dependent upon usage, past equipment problems, severity of equipment and what the equipment controls. FMPC supervisors in the production areas have control over setting or changing the inspection timetable. Inspections are documented as to date, part inspected, items inspected and method of inspection, acceptance criteria, results, and the signature of the inspector. Analytical results shall be performed to verify that the chemical and isotopic composition of the waste is within the limits specified for shipment to NTS.

10.2 Define Waste Certifying Function

The QA Waste Certification function is to certify that wastes shipped to the Nevada Test Site meet NVO-325, DOE, and DOT requirements. In accordance with procedures, regulations and official directives, developed by Operations, Waste Management, Quality, Radiological Safety, Environmental Engineering and Waste Certification is responsible for verifying the acceptability of the labeling and marking, condition, and the content of each waste package, and use of approved packaging materials and techniques before wastes are loaded for shipment. Also, an overcheck is performed of the loading and placarding of each vehicle (to ensure compliance with DOT regulations) and review of shipping documentation (for accuracy and completeness) prior to final release for shipment. Included in the certification function is the collection, processing, documenting and distributing of information used to certify shipment of waste to the NTS. A responsibility also exists for monitoring in areas of waste generation.

11.0 TEST CONTROLS

11.1 Definition of Test

Tests that are required to verify and certify conformance to specification requirements shall be planned and executed. Characteristics to be tested and test methods to be employed shall

be specified. Test results shall be documented and their conformance with acceptable criteria shall be evaluated and included in the certification reports.

When a process is in the development state, qualification of the new or revised process shall be achieved in accordance with the documented "Plant Test Authorization" (PTA). Results of the development and a record of the changes to the process will be documented by the Test Coordinator in the PTA completion report. Applicable management review and approval is required to issue a PTA. Results of the PTA can be utilized to develop an SOP, verify manufacturing specifications, analysis for particle size, weight of package, labeling, exterior contamination, radiation levels at exterior surfaces, and chemical composition.

11.2 Analytical Test Controls

The Analytical Laboratories Quality Assurance section prepares and distributes quality control samples for the analytical lab. The individual laboratories analyze these quality control samples in the normal lab sample stream. Quality control samples make up approximately 10% of the total samples analyzed. The following Analytical Laboratory controls are:

An internal lab standard, reference standard, is used to analyze the measurement system to ensure it is "in control". The frequency of analysis of reference standards depends on the characteristics of the individual measurement system.

A blank sample is formulated in the lab or field in order to duplicate a routine sample excepting the absence of the analyte. Analysis of blank samples provides date for determining interferences due to contamination and for establishing lower limits of detection.

Two kinds of samples are used for replication of analyses, duplicate and recycle samples. Replicate analyses provide data for the evaluation of the precision of an analytical method.

Control samples are a sample of known concentration of either a primary standard or a standardized production material. These samples provide data for the evaluation of the accuracy and precision of an analytical method.

Finally, the Analytical Laboratory uses a spiked sample of a known amount of analyte. The percent recovery can be calculated from the difference between the measured concentrations of the spiked and routine samples. Analyses of the percent recovery from spiked samples is useful for determination of matrix and interference effects, determination of accuracy and precision and testing for changes in analytical quality.

11.3 Traceability of Calibration Sources

The analytical Laboratory Quality Assurance supervisor has responsibility to monitor the lab activities for strict adherence to calibration/standardization programs documented in approved Analytical Methods and or SOP's. The calibration/standardization of a given piece of equipment involves the following considerations:

- frequency
- range
- reference standards
- environmental conditions
- documentation

The calibration/standardization of each piece of equipment is documented in a log record, card, label, or other record as appropriate. This documentation permits monitoring of instrument or system status and traceability of results.

11.4 Operational Package Weight

Package weight is controlled with checklists and SOP's. Package weight limits are listed in SOP-20-C-601 and SOP-TRF-46-C-110. Most process waste is weighed and packaged at the point of generation except for Sea/Land containers which are weighed at the central truck scale. Transportation weighs construction waste to

verify and record non-process package weight prior to transfer to Waste Management. Packages found to exceed weight limits are returned to the waste generator. Weights are recorded on the FMPC-REST-3236 form as well as each individual container.

12.0 CONTROL OF MEASURING & TEST EQUIPMENT

12.1 Calibration Schedules & Stickers

Calibration control shall be achieved by following procedures that describe techniques and requirements for the frequency of calibration of the operating instruments. This control ensures that all instruments, gauges, and other measuring and test equipment are calibrated to the required accuracies. The scheduling, pickup, and/or recalibration of all field instruments is performed by the Quality Operations Section with procedures using standard techniques. All analytical instruments are calibrated using standards traceable to National Bureau of Standards. The QA inspection equipment is either checked internally or by a trained external vendor. The nuclear material scales are checked by the Maintenance Department. These departments are responsible for ensuring that such items are of the proper type, range, accuracy, and tolerance to accomplish the function of determining conformance to specified requirements. See Table 5 for all equipment under the calibration system.

All measuring and test equipment is categorized into one of three types:

1. "casual" devices & systems that are not to be calibrated in service,
2. "routine" devices and systems that are to be included in a calibration recall program on a regular cycle, and
3. "experimental" devices and systems that are to be calibrated by, or at the direction of, the user.

Items that fall in the first classification are rulers, tape measures, levels, and other such devices. Items that fall into the second category are the ones that are calibrated by the Quality Operations Section, and the applicable procedures are located in the Quality Department Procedures (Table 1). Hand-held radiation meters and counters are calibrated on a routine schedule and are on a recall program. The specific items requiring calibration and frequency of recalibration are listed in Table 5.

12.2 Environmental Controls For Measuring Equipment

The environmental conditions under which a piece of equipment is calibrated/standardized shall duplicate the environmental conditions under which the desired analyses will be performed. Control samples/standards are run to monitor the response of equipment.

13.0 HANDLING, STORAGE, & SHIPPING

13.1 Not Adverse To Certification

Waste containers destined for off-site disposal at NTS are maintained in such a way as to not alter the container certification. All containers are closed, closed and/or locked to prevent tampering. Containers awaiting shipment which must be placed in temporary storage. Immediately prior to loading, containers are rechecked per SOP's and checklists to verify the original certification. A complete new radiation smear is required if a container has been in storage more than 30 days. WMCO requires a smear test within 48 hours of shipment. A partial radiation smear is performed after 48 hours and before the 30 day period is obtained.

13.2 Security

FMPC Security & Safeguards Section conducts random mobile tours of the Waste and Operations areas during the first shift (8:00 AM - 4:30 PM). During the off-shifts and weekends some of the buildings are locked and 2-3 security foot patrols are conducted throughout the vicinity. Security must be notified to open the door of a locked building.

13.3 Fire Safety

Specific fire and safety controls are detailed in the SOP's of applicable operations/processes. Monthly fire and safety inspections are performed in the waste and process areas/buildings by the Fire & Safety Group. A report is completed and forwarded to the facility owner. Special work practices which may require additional monitoring by Fire & Safety Group can be arranged on an as need basis.

13.4 ALARA

The "As Low As Reasonable Achievable" ALARA principle is a requirement for waste processes to implement programs to assure that exposures to chemicals and physical stresses are maintained within the guidelines and standards provided in DOE/OR 5480.4. Additionally, the reduction of radiation exposure is maintained with the ALARA principle adherence to DOE/EV/1830-TS, 4-80. A dosimeter program is utilized for FMPC personnel and subcontractors. Employees are trained to work each job with the ALARA principle as a key practice. Also, each SOP is reviewed with ALARA goals effecting each new or revised work practice.

13.5 Compliance With Title 49 Of The CFR

Compliance with Title 49 of the CFR for handling, storage, and shipping are detailed in SOP-TRF-46-C-110. The Traffic Section of Transportation gives final authorization to release a shipment off-site after detailed inspection at loading, vehicle inspection and review of shipping documentation. This is to certify that the materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the DOT. Containers are checked at loading against the Tally Sheet for:

- correct container identification numbers
- shipment number
- quantities
- gross weights
- NV-211 labels attached
- LSA/LQ/RQ labels attached
- inspect for any container defect
- proper container closure

Transport vehicle inspection is performed for roadworthiness and recorded on FMPC-SAML-2495 form (Figure 13). Significant defects found will cause vehicle rejection and will be returned to the carrier unused. Containers will be loaded for proper weight distribution and shored. An additional contamination precaution

is used for baled trash packages by lining the trailer floor and approximately 3 feet up the sides and rear of vehicle. Final checklists are completed after vehicle is loaded.

A radiation survey is performed to assure contamination levels are in compliance with Title 49 CFR criteria levels and results recorded on FMPC-ES&H-1596-1 and FMPC-ES&H-1993-1 forms. The vehicle is weighed to ensure axle weights are within legal limits.

An envelope containing copies of the Tally Sheet, Curie List and REECo Waste Management Storage & Disposal Sheet are attached to the rear inside door, container or side panel or given to the driver in the case of Sea/Land containers. Radioactive placards are posted and trailer doors closed and a numbered tamper proof seal applied to the locking mechanism.

Shipping documents are prepared in compliance with Title 49 CFR. Carrier/driver instructions are issued to the driver, signed copy of bill of lading, Nevada Permit, Tally Sheet, envelope for consignee with Tally Sheet, Curie List and memo bill of lading are also issued to the driver. Each driver is instructed to call WMCO each day so that if a travel delay does occur WMCO can contact ReeCo with a new estimated arrival time.

14.0 INSPECTION, TEST & OPERATIONAL STATUS

14.1 Calibration Sources

The status of inspection and test activities shall be identified on documents traceable to the items tested or inspected. The status shall be maintained through indicators such as physical location and tags, markings, stamps, inspection records, or other suitable needs.

Calibration stickers are placed on measuring and test equipment (Table 5).

14.2 Preventive Maintenance

Preventive maintenance on measuring systems and instruments is provided by the Electronics Laboratory and QA. Personnel of the Electronics Lab have had manufacturers training courses for some of the equipment. Some complete service manuals and a limited stock of spare parts are available. The availability of these personnel and resources at FMPC provides a means of ensuring optimum performance and minimum downtime for instruments and measurement systems.

Vendor service contracts or contracts with service agencies are utilized to provide preventive maintenance for some major instrument systems to ensure performance and to minimize downtime. Production scales are maintained by the Maintenance Department.

15.0 CONTROL OF NON-CONFORMING ITEMS

15.1 Control & Disposition of Non-Conformances

Non-conformances of major significance meeting specified criteria are handled in accordance with Site Procedures FMPC-703, Unusual Occurrence Reporting System, and FMPC-704, Minor Event Reporting System. The handling of all other non-conformances, except of a minor nature (e.g., paperwork inconsistencies easily and quickly resolved), is governed by Site Procedure FMPC-706, "Deviation and Corrective Action Reporting," and Department Procedure WMCO-QAP-8.01, same title. The systems defined in the above include reporting, dispositioning, corrective action, tracking and closeout of non-conformances.

15.2 Special Tags & Labels

Non-conforming items are tagged for identification and control. The control of non-conforming items and use of tags are detailed in written site procedures. Two tags are utilized FMPC-QA-2708 (Figure 11) for nonconformances and FMPC-QA-2709 (Figure 12) for hold for inspection.

15.3 Segregation &/Or Removal From Operating Status

Non-conforming items are physically segregated to preclude inadvertent use. The condition is evaluated by cognizant personnel and disposition specified, performed, and verified as complete as a basis for formal close-out of the non-conformance.

15.4 Documentation

The non-conforming condition is documented on a Deviation & Corrective Action Report (DCAR) form and responsible supervision notified. Once the corrective action(s) are completed, physical corrective action verification is documented and physical controls are released.

16.0 CORRECTIVE ACTIONS

16.1 On Non-Conformance Items

Corrective actions on non-conforming items are part of the Deviation & Corrective Action Report (DCAR) system initiated by the Quality Department. Corrective action is to preclude recurrence. In response to the request for corrective action the applicable manager shall detail a reason for the deviation, action to be taken/proposed and action taken to prevent recurrence. Permanent corrective actions are required to preclude recurrence of significant problems.

16.2 Findings/Recommendations

Findings and recommendations from external audits and internal surveillances are responded to within the time period specified by the reviewing organization. A follow-up audit or surveillance with a written disposition per the DCAR system is completed by WMCO-QA.

16.3 Exceptions Approval From The DOE/NV Manager

Exceptions approval from the DOE/NV manager to the criteria specified in NVO-325 will be obtained as needed. A safety analysis will accompany the request for exception when the fissile loading is increased or when other compliance criteria is significantly affected. All exceptions will be requested by DOE/FMPC and approval received by the DOE/NV manager prior to shipment. A copy of the exception approval will be sent to the Radioactive Waste Management Project of REECo Environmental Sciences Department.

17.0 QA RECORDS

Records that furnish documentary evidence of quality shall be specified, prepared, and maintained. Records shall be legible, identifiable, and retrievable. Records shall be protected against damage, deterioration, and loss. Requirements, responsibilities for record transmittal, distribution, retention, maintenance, and disposition shall be established and documented. The waste processing records are identified in Table 3 and their retention period identified in DOE Order 1324.2.

18.0 AUDITS/WASTE CERTIFICATION

18.1 External - Company/Management and DOE/NV Manager

An audit by DOE/NV/REECO, of the WMCO waste operations, is conducted annually as defined in NVO-325. Currently there is no prescribed audit schedule by external organizations other than DOE/NV/REECO.

18.2 Internal - WMCO Quality Assurance

Internal overview activities of the waste shipment activities, in addition to the certification activities, are performed as surveillance or internal audits. Surveillances activities are outlined in the process flow diagram, Figure 4. Surveillances are conducted on a periodic basis of "real time" activities as described in standard operating procedures. These surveillances, conducted by Site Quality Engineering (SQE) in the Quality Department, are identified in a quarterly plan and results are documented on a surveillance report addressed to responsible management for resolution of observations and findings. All nonconformances are documented on a Deviation and Corrective Action Report. All accepted corrective actions responses (as agreed to by SQE) are verified to be complete by SQE prior to close out of the surveillance.

Internal audits are also conducted on at least an annual basis by a team of auditors, including at least one "lead auditor", qualified to NQA-1. The formal program includes establishing long term plans of function, systems, and activities to be audited, detailed plans regarding personnel, procedures, and scope for individual audits. All audits are conducted using written checklists. Results of all audits are documented in an audit report addressed to responsible management for written corrective action responses to identified observations and findings. All nonconformances are documented on a Deviation and Corrective Action Report. Verification of completion all accepted corrective responses are documented prior to close out of the audit.

Westinghouse Materials Company of Ohio

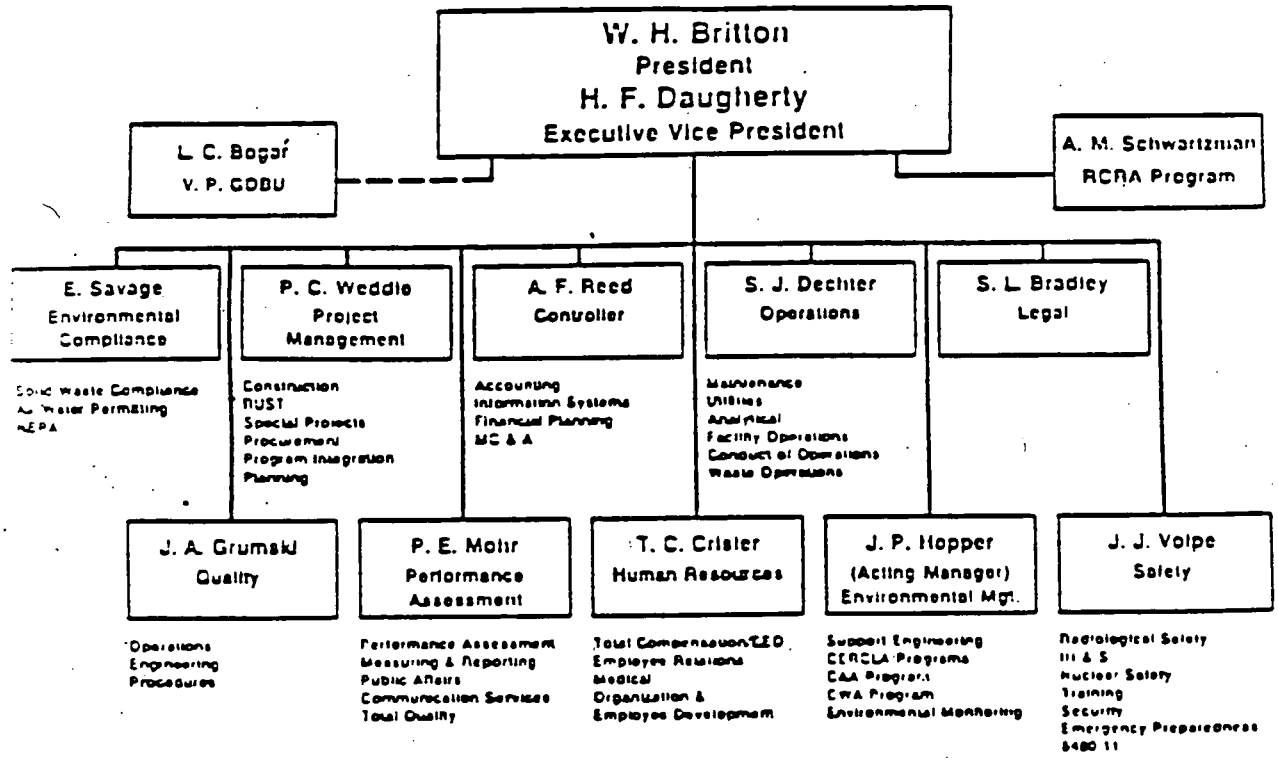


FIGURE 1

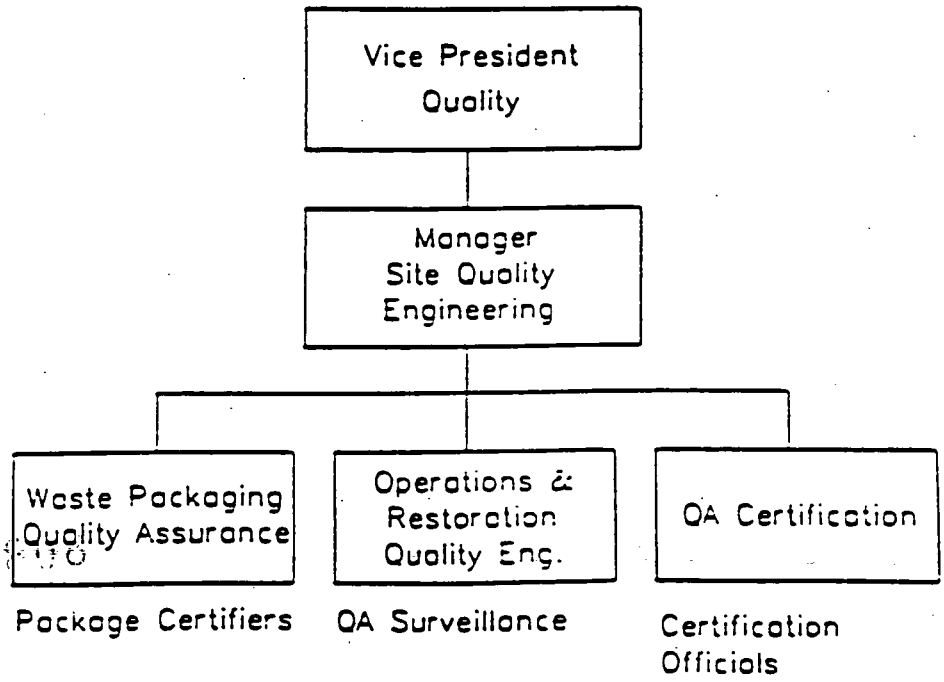


FIGURE 1A

Waste Processing Interface

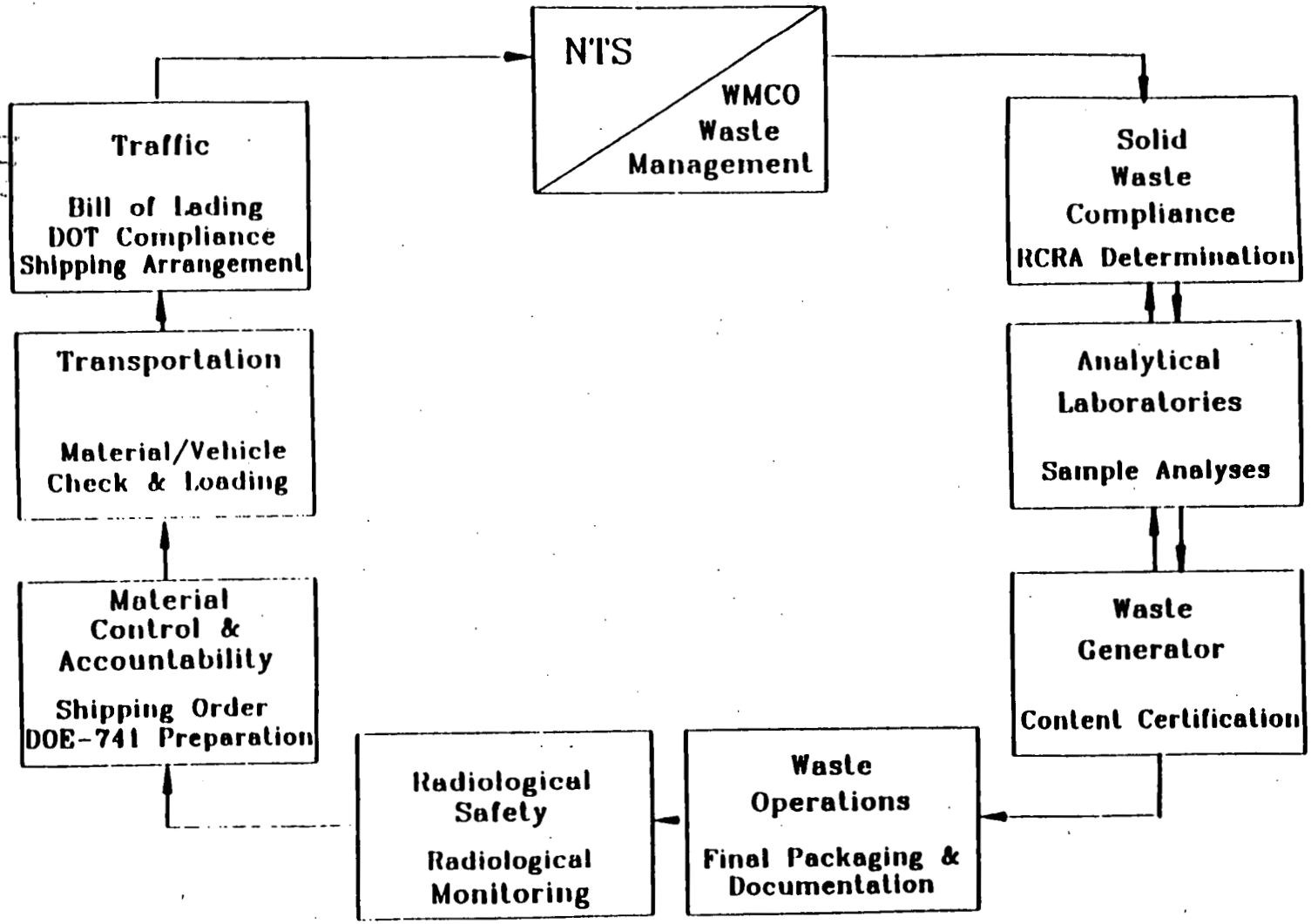
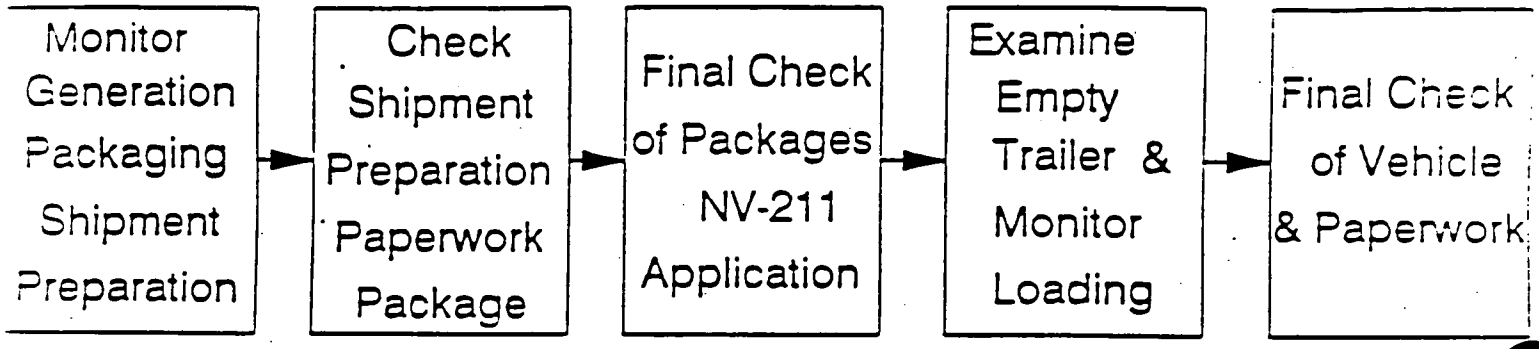


Figure 2

WASTE CERTIFICATION

Waste Packaging Quality Assurance



Quality Assurance Certification

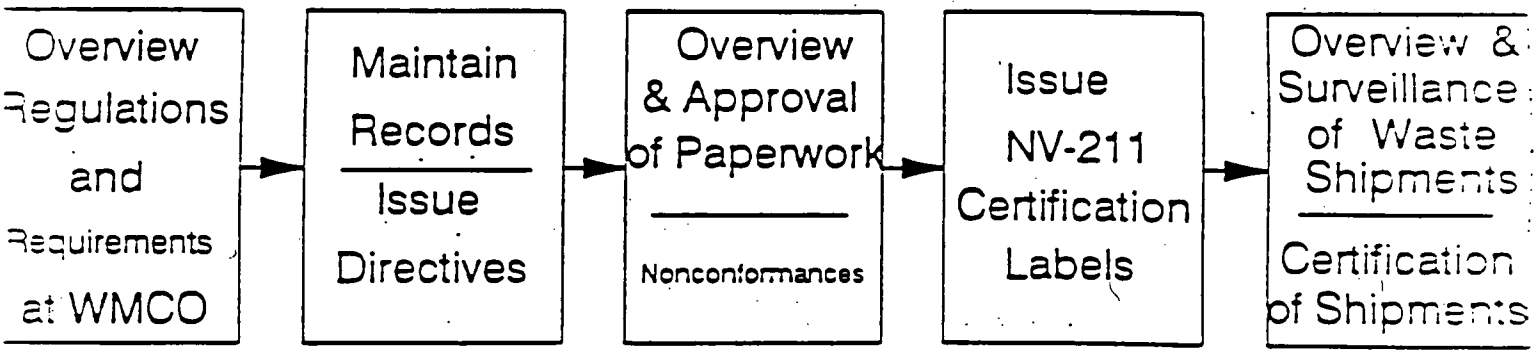


FIGURE 2a

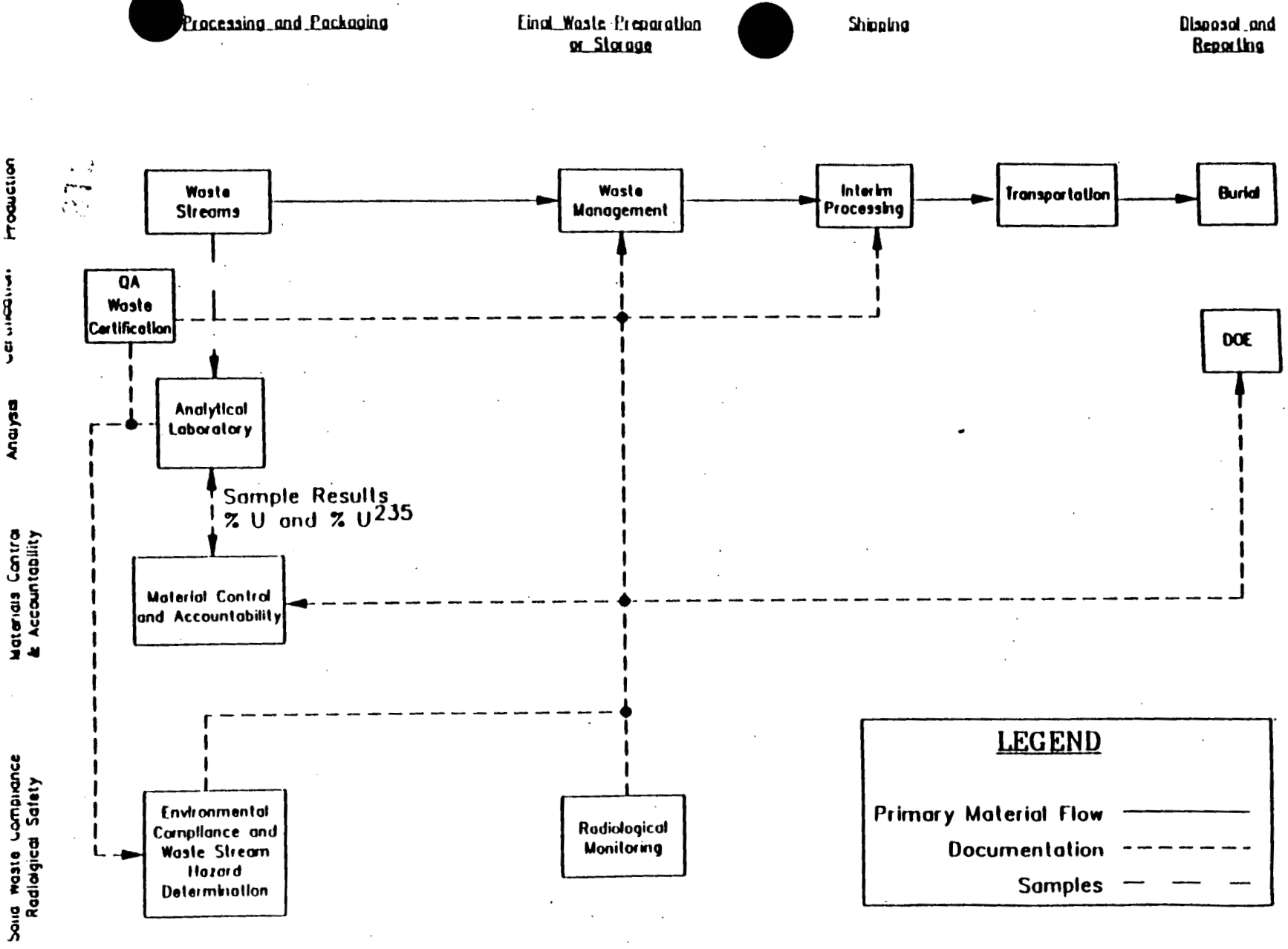


FIGURE 3. Waste Processing Flow Chart – Primary Material Flow, Documentation, and Samples

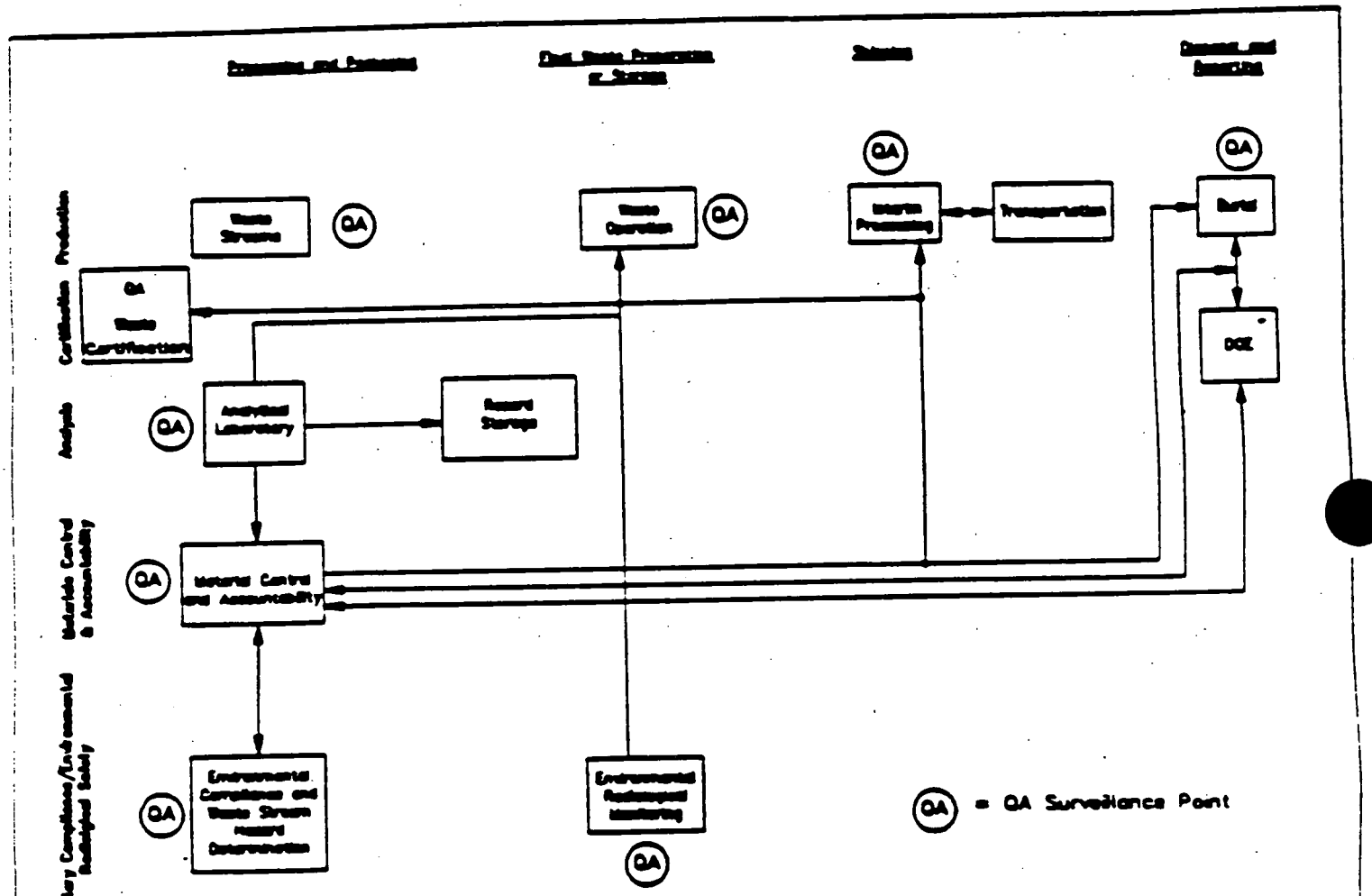


FIGURE 4. Waste Processing Flow Chart - Record Keeping and QA Surveillance

LLW CONTAINER DATA SHEET

Section I — EMPTY CONTAINER CERTIFICATION DATA

Serial # _____

Container No. _____

Container Type:
MB ☐ SL ☐
WB ☐ D ☐
B ☐

	YES	NO	N/A
Empty at Start			
Acceptable Condition			
Sealand Prep Complete			
Absorbent Added			
Liner Present			
Drain Plug Secure			

Pkg Generator _____ Badge # _____ Date _____

Supervisor/PQA Signature _____ Badge # _____ Date _____

Section II — FULL CONTAINER CERTIFICATION DATA

Origin: _____

DCAR # _____ Date Closed _____

Ready for Interplant Transfer: _____ Date _____

Material Type: _____

	YES	NO	N/A
Material is as Coded			
Prohibited Materials			
Free Liquids in Container			

Generator _____ Badge # _____ Date _____

Supervisor/PQA _____ Badge # _____ Date _____

Section III — FINAL PACKAGE CERTIFICATION DATA

	YES	NO	N/A		YES	NO	N/A
Max Volume Utilization to Wt. Capacity				Pins/Bolts/Retainer Ring Secure			
Liquids or Excessive Moisture Present				Required Banding in Place			
Absorbent Added				Wood Box Lid in Place			
Liner Closed				Radiological Dose Rates			
Drain Plug Check (Red/Black Dot)				LSA/LQ/RQ Present			
Gaskets/Caulking in Place				Markings Acceptable			
Bolt Ring in Place/Torqued				Package Condition Acceptable			

Container Condition upon receipt: ☐ Acceptable ☐ Damaged

DCAR # _____ Date Closed _____

Package Dimensions _____

Material Added: _____ Date _____

Source _____
Description _____
Quantity _____

Prohibited Materials Inspection:
Yes ☐ No ☐

Gross _____ lbs.
Tare _____ lbs.
Net _____ lbs.

Waste Stream No. ONLO-0000000 __ __

Lot Number: _____ - _____ - _____ - _____

Container No. _____

Percent Combustible by Volume: _____

Shipment No. WML __ __ __ __ __

Sections Complete _____

Final Pkg. Generator Signature _____ Badge # _____ Date _____

Waste Mgmt. Shipping Supervisor _____ Badge # _____ Date _____

FIGURE 5

ANALYTICAL LABORATORY SAMPLE SEAL

Collector _____ (Signature)

Customer Sample No. _____

Date Collected _____ ☐ am ☐ pm

Place Collected _____

Time Collected _____

FIGURE 6

3511

ANALYTICAL LABORATORY SAMPLE LABEL

Collector _____ Sample No. _____

Place of Collection _____

_____

Date Sampled _____ Time Sampled _____ ☐ AM ☐ PM

Field Information (Sample collection method, etc.) _____

_____

_____

ID Number _____
(Lab Use Only)

FIGURE 7

FMPC

ENVIRONMENT SAFETY & HEALTH - ENVIRONMENTAL COMPLIANCE

CUSTODY TRANSFER RECORD/LAB WORK REQUEST

FROM BY	CLIENT	ALDA CONTACT
	CLIENT CONTACT	DATE DUE
SENT TO	PHONE	PROJECT NUMBER

SAMPLE IDENTIFICATION						ANALYSES REQUESTED			
CT NO./ RUM NO	SAMPLE NO.	DESCRIPTION	MATRIX	DATE COLLECTED	CONTAINER/ PRESERVATIVE				

MATRIX: S - SOIL, W - WATER, O - OIL, DS - DRUM SOLIDS, DL - DRUM LIQUIDS, X - OTHER (Specify)

SPECIAL INSTRUCTIONS:

ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE	TIME	ITEM/REASON	RELINQUISHED BY	RECEIVED BY	DATE

FIGURE 8

3511

FMPC
PRODUCTION OPERATIONS
CHAIN-OF-CUSTODY RECORD

Invoice No. _____

Company's Name _____ Phone No. _____ Carrier Way Bill No. _____ Lab Destination _____
Mailing Address _____

Name of Sampler(s) _____ Phone No. _____ Badge No. _____

SAMPLE NUMBER	SAMPLE LOCATION AND DESCRIPTION (Include Type)	SAMPLED		SAMPLE TYPE	CONTAINER TYPE	ANALYSES REQUESTED (Please refer to the solution)						SAMPLE COND ON RECEIPT	TYPES OF ANALYSES
		DATE	TIME										
													1 Gamma Analysis
													2 Total U
													3 Total Th
													4 Gross Alpha
													5 [illegible]
													6 Th-230
													7 Th-232
													8 Ra-226
													9 Uranium Isotopes (U Concentration)
													10 Thorium Isotopes (Th Concentration)
													11 _____
													12 _____
													13 _____
													14 _____
													15 _____

Field Information _____

Possible Sample Hazards _____

SIGNATURES

Relinquished By _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By _____

Relinquished By _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By _____

Relinquished By _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By _____

Relinquished By _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By _____

DISTRIBUTION OF COPIES
1 To Accompany Samples
1 Field Copy

FMPC 3112 (3/1/85)

FIGURE 9

Westinghouse Materials Company of Ohio

P. O. Number: _____

Receiving Report No.: _____

Inspection Report No.: _____

Date Inspected: _____

Badge No.: _____

QUALITY ACCEPTED

FIGURE 10

3511

Westinghouse
Materials Company
of Ohio

DCAR No. _____
DATE _____

QUALITY NONCONFORMANCE

TO BE REMOVED BY AUTHORIZED PERSONNEL ONLY

FMPC-Q&S-2708 (REV 12/13/89)

Side 1

QUALITY NONCONFORMANCE

P. O. /SHIPMENT/LOT/PACKAGE/CONTAINER I.D. No. _____

RECEIVING REPORT NO. _____ INSPECTION REPORT NO. _____

DESCRIPTION OF NONCONFORMANCE _____

_____

_____

NAME _____ BADGE No. _____ PHONE No. _____

TO BE REMOVED BY AUTHORIZED PERSONNEL ONLY

FMPC-Q&S-2708 (REV 12/13/89)

820

Side 2

Westinghouse
Materials Company
of Ohio

QUALITY
HOLD FOR INSPECTION

TO BE REMOVED BY QUALITY PERSONNEL ONLY

FIGURE 12

3511

FMPC
SECURITY, ACQUISITION & MATERIALS LOGISTICS DEPARTMENT - TRANSPORTATION SECTION

OFFSITE LOADING — TIE DOWN INSPECTION — VEHICLE INSPECTION

Date: _____

CARGO SS-1 25/DEPLETED BOX/SKID NO.	TRAILER NO. SS/1 25/DEPLETED BOX/SKID NO	SEAL NO SS/1 25/DEPLETED BOX/SKID NO

Checked By: _____
SIGNATURE - CHECKER

TIE-DOWN INSPECTION AND CHECK-OFF SHEET

Wood bracing installed to prevent longitudinal or lateral movement ..... Yes ☐ No ☐

Steel strapping around the cargo securing as a stable shipment ..... Yes ☐ No ☐

Containers divided into two units, one front and one rear of trailer not exceeding approximately 20,000 pounds each ..... Yes ☐ No ☐

1" steel strapping utilized (5400 lbs. minimum tensile strength) ..... Yes ☐ No ☐

Six each anchor plates or "U" bolts fastened to underframe (three each side of unit) plates and secured for three transverse bands over unit ..... Yes ☐ No ☐

Four each breakaway plates or "U" bolts fastened to underframe (two for each band) plates under each unit and secured for two longitudinal bands, securing the bands into one left unit, anchored to the floor of the trailer ..... Yes ☐ No ☐

Two Signode seals No. 107 crimped whenever two bands are used on an end over end top joint ..... Yes ☐ No ☐

Anchor and breakaway plates secured with eight each 3" nuts ..... Yes ☐ No ☐

VEHICLE INSPECTION REPORT

Condition of Floor _____ Condition of Sides _____

Condition of Interior _____ Condition of Exterior _____

Condition of Roof _____ Condition of Rear Doors _____

Owner assessments _____ Detailed Sabotage Devices _____ Yes ☐ No ☐

Carrier Comments _____ Detailed Evidence of Sabotage _____ Yes ☐ No ☐

Accepted _____ Rejected _____

Checked By: _____
SIGNATURE - TRANSPORTATION SUPERVISOR

NO.	DISTRIBUTION OF COPIES
1	Transportation Section (RECORD COPY)

FIGURE 13

FMPC-SAML-4/83 (REV. 11/84)

TABLE 1. Waste Processing - Master Procedures

Procedure Number	Procedure Title
FMPC-2054	WMCO Site Policies & Procedures Manual

Plant 4 - Chemical Plant

Procedure Number	Procedure Title
4-C-901	Operator Scale Checking in Plant 4
4-C-801	Conveying, Blending, and Packaging Green Salt
4-C-803	Packaging Depleted Green Salt
4-C-804	Mobile Hopper Discharge Station and Packaging (Depleted Green Salt)

Plant 8 - Wet Area

Procedure Number	Procedure Title
8-C-104	Makeup of Precoat Slurry and Precoating Rotary Vacuum Filters
8-C-114	Filtration of Raffinates
8-C-115	Filtration of Uranium Bearing Slops
8-C-113	Filtration of Slag Leach Filter Cake Slurry

Plant 8 - Dry Area

Procedure Number	Procedure Title
8-C-201	Rotex Screening
8-C-208	Rotary Kiln
8-C-209	Primary Calciner

Plant 8 - Miscellaneous

Procedure Number	Procedure Title
8-C-901	Drum Washer
8-C-905	Operator Scale Testing in Plant 8

3511

TABLE 1. Continued

Plant 2/3

Procedure Number	Procedure Title
2-C-909	Operator Scale Checking in the Refinery
2-C-923	Trash Boiler Operation
2-C-921	Redrumming of Waste Oil

Plant 1 - Waste Operations

Procedure Number	Procedure Title
01-104	Segregation of Wooden Pallets
1-C-603	Segregation and Disposal of Scrap Wood
1-C-608	Storage of Radioactive Material
1-C-602	Low-Level Radioactive Waste (L-LRW) Shipment Preparation
C-90-036	Completing the LLW Container Data Sheet
1-C-101	Sampling Miscellaneous Materials
PO-S-01-002	Internal Audit Program
PO-S-01-001	Storage and Handling of Empty L-LRW Containers
PO-S-01-003	Internal Inspection
PO-D-006	Calculation of Drum Equivalents for FMPC Waste Volumes
1-C-804	Overpacking Deteriorated Containers
20-C-601	Packaging L-LRW for Off-Site Disposal
1-C-904	Operator Scale Checking in Plant 1

Plant 5 - Metals

Procedure Number	Procedure Title
5-C-902	Operator Scale Checking in Plant 5
5-C-301	MgF_2 Liner Preparation and Distribution

TABLE 1. Continued

Waste Technology

Procedure Number	Procedure Title
WT-A-111	Metals Management Program
FMPC-720	Control of Construction Waste

Project Engineering

Procedure Number	Procedure Title
PMP-425	Construction Waste Handling

Security, Acquisition & Materials Logistics

Procedure Number	Procedure Title
	WMCO Procurement Manual
	Inventory Control & Warehousing Section Manual
SOP-TRF-46-C-110	Preparation & Shipment of Radioactive Materials (Low-Level Wastes)
FMPC-2039	On-Site Transportation of Radioactive & Nonradioactive Hazardous Materials
FMPC-314	Packaging On-Site Movement & Off-Site Movement of Material
FMPC-302	Request of Purchase

3511

TABLE 1. Continued

Operations, Safety & Health

Procedure Number	Procedure Title
OSH-P30-004	Survey of Radioactive Materials Received & Shipped
	Dosimetry & Instrumentation Section Procedures

Controller's Organization

Procedure Number	Procedure Title
FMPC-2115, Rev.1	Materials Control & Accountability Plan
PC-MC&A-1	Quality Assurances Plan - Nuclear Materials Control
FMPC-307	Control & Accountability of Nuclear Materials

Technical Support

Procedure Number	Procedure Title
	Analytical Laboratories Procedures Manual
	Analytical Laboratories Quality Assurance Plan

Quality Assurance

Procedure Number	Procedure Title
WMCO-QAP-12.12	Certification of L-LRW Loading, Examination of Transport Vehicle/Trailer For Off-Site Shipment
WMCO-QAP-12.09	Package Examination, Sealing & Certification
WMCO-QAP-12.08	Determination Method For Fissile Material
WMCO-QAP-14.01	Receiving Inspection

TABLE 2. Waste Processing - Archival Documents

Document Description

- Procedures in Table 1 and Specifications listed in Table 6
- Plant Test Authorizations and Reports
- Nuclear Materials Shipping Orders
- Uniform Hazardous Waste Manifest
- Bill of Lading
- QA Plans
- Tally Sheet
- Radiological Monitoring Records
- Waste Stream Characterization Data Sheet
- Loading Inspection and Tie-down Sheet
- Item Production/Cetification/Identification Card
- Laboratory Analysis Report
- Weight Tickets
- Item Production/Certification/Identification
- Waste Shipment Final Authorization Checklist
- Trailer/Vehicle checklists
- Nuclear Materials Transaction Report (DOE-741)

3511

TABLE 3. Waste Processing - QA Records

Records Description

- Purchase Requisition and Purchase Order Documentation
- Receipt Inspection of Incoming Materials Including Supplier Certification if Applicable
- Shipping Order for Nuclear Materials
- Vehicle and Shipment Radiation Monitoring Reports
- Personnel Training Records
- Smear Test Results for Shipping Container
- Audit Reports
- Waste Certification Program Plan
- Records of Servicability/Calibration of Measuring Equipment
- Weight Tickets
- Surveillance Reports
- Bill of Lading for Shipments
- Uniform Hazardous Waste Manifest
- L-LRW Shipping Report
- Waste Stream Characterization Data Sheet
- Carrier/Driver Instructions for Radioactive Shipments and Exclusive Use
- Item Production/Certification/Identification
- Waste Shipment Final Authorization Checklist
- Vehicle Inspection Reports

828

Note: Retention periods are in accordance with DOE Order 1324.2

TABLE 4. Waste Processing - Sample Material Identification and Control

Material Description

- MgF_2 Samples for Analysis
- Slag Leach Filter Cake Samples for Analysis
- Raffinate Cake Samples for Analysis
- Black Oxide Samples for Analysis
- Sump Cake Samples for Analysis
- Oversized Green Salt (UF_4) Samples for Analysis
- Miscellaneous Waste Residue Samples for Analysis
- Waste Samples for Analysis of Hazardous Waste Determination
- Identification of Packaged Waste (Plant to Plant and Offsite Shipment)
- Construction Waste and Rubble Samples and/or Material Identification

3511

TABLE 5. Waste Processing - Measuring and Test Equipment Calibration

(Procedures indicate actions at a minimum.)

Items	Frequency
Electric Weighing Scales (net ship. wt.)	monthly
Scale No. 1-27 Plant 1 Bldg. 71	monthly
Scale No. 5-35 Plant 5 Bldg. 55	monthly
Scale No. 4-16 Plant 4 (UF_4 area)	annual
Scale No. 8-17 Plant 8 (Rotex area)	annual
Scale No. 8-16 Plant 8 (Kiln area)	semi-annual
Mosstron 5000/016132 Transportation	semi-annual
Analytical Laboratory	semi-annual (Daily Efficiency Checks)
ES&H Radiological Monitoring Equipment	semi-annual
Eberline RO3C (Beta-Gamma)	semi-annual
Eberline PRM 6 (Alpha)	quarterly
Scintillation Alpha Counters (SAC)	annual (Daily Efficiency Checks)
Nilfisk Hepa Portable Vacuum	semi-annual
Torque Wrenches	quarterly

TABLE 6. Waste Operations – Material Requiring Procurement Control

Material Description	
o 48 Gallon Drums	WMCO 40X-5500-M-00012-1
o 55 Gallon Drums (17H)	49CFR178.118-2 and in accordance with DOE Eval. Document for DOT-7A Type A Pkg. MLM-3245 DP/00053-H1
o 83 Gallon Drums	16 gauge steel throughout 25 7/8" ID 38" IH
o Metal Shipping Container (Strap)	WMCO 30A-5500-M-00060-1
o 2' X 4' X 7' Wooden Boxes	WMCO 40A-5500-M-00009-7
o 4' X 4' X 7' Wooden Boxes	WMCO 40A-5500-M-00009-7
o 3.5' X 4.5' X 6.5' Metal Boxes	WMCO 40X-5500-M-00011-0 or an approved equal
o Metal Shipping Container (Strap)	WMCO 30A-5500-M-0061-0
o Metal Shipping Container (Clip)	WMCO 30A-5500-M-00059-0
o Lectro-Panel SBA Six-Drum Overpack Details & Widment	89DW000800 Revision 9
o Cargo Containers	

NOTE: This list is not all inclusive. However, any additional containers used will follow similar procurement controls.

TABLE 7. Waste Processing - Specifications

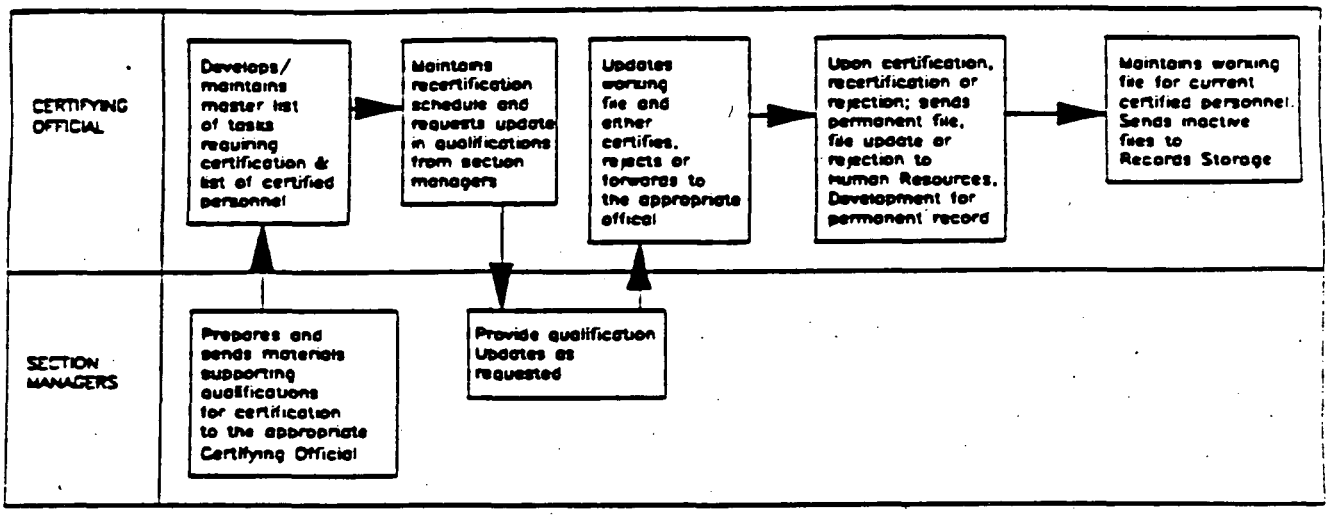
Specification Description

- U.S. Department of Energy Nevada Operations Office, "Operational Radioactive Defense Waste Management Plan for the Nevada Test Site," NVO-325
- U.S. Department of Energy, DOE 1540.1, "Materials Transportation and Traffic Management,"
- U.S. Environmental Protection Agency, "Code of Federal Regulations, Title 40, Part 261," Identification and Listing of Hazardous Waste.
- U.S. Department of Transportation, "Code of Federal Regulations, Title 10, Section 71, Packaging and Transportation of Radioactive Material,"
- U.S. Department of Energy, DOE 5480, "Safety Requirements for Packaging of Fissile and Other Radioactive Materials,"
- U.S. Department of Energy, ORO 5480.1A, Chapter XI, " Requirements for Radiation Safety,"
- U.S. Department of Energy, Draft DOE Order 5820.2A, "Radioactive Waste Management."
- U.S. Department of Transportation, "Code of Federal Regulations, Title 49, Transportation."
- ALARA - DOE 5480.11, "Requirements for Radiation Protection."

WESTINGHOUSE MATERIALS COMPANY OF OHIO - FMPC		Document Number: WMCO-QAP-6.09
QUALITY ASSURANCE DEPARTMENT PROCEDURE	Subject: ADMINISTRATION OF PERSONNEL CERTIFICATION RECORDS	Revision: 2
	Authorized: (Quality Assurance Manager) J.A. Zimmerli	Page 1 of 6
		Effective Date: 12/16/88

1.0 SCOPE

This procedure applies to the responsibilities and actions of the Quality Assurance Department to manage the documentation related to the certification of personnel as indicated in the following flowchart.



2.0 PROCEDURE

2.1 Development and Maintenance of Certification Records

Certifying Official:

2.1.1 Develops and maintains a list of Westinghouse Materials Company of Ohio (WMCO) (for additional abbreviations, acronyms, and definitions see WMCO-QAP-1.05) personnel who are certified to perform specific quality assurance tasks within the scope of their assigned responsibility.

2.1.2 Develops and maintains a permanent and a working training and certification file for each QAD employee and other WMCO employees certified by the individual in accordance with Attachment A.

2.1.3 Maintains the QAD recertification schedule (see WMCO-QAP-6.05 and WMCO-QAP-6.06) for those recertifications for which they are responsible.

STEP 8.

2.2 Update of Records

Section Managers (will be requested of supervisors of other WMCO employees certified by the QAD):

2.2.1 Coordinate the completion of audit, inspection, examination and test participation records along with any other new information which supports certification and forward to the responsible Certifying Official.

Certifying Official:

2.2.2 Updates the certification and training files whenever there are annual evaluations, certification extensions, or changes in certification status in accordance with WMCO-QAPs-6.05 and 6.06.

2.2.3 Forwards permanent certification file, when initially completed and upon each update; to Human Resources, Development. Inactive certification and training files are to be put into site records storage in accordance with WMCO-QAP-9.01.

3.0 REFERENCES

3.1 WMCO-QAP-1.05, Abbreviations, Acronyms, and Definitions

3.2 WMCO-QAP-6.05, Certification of Audit Personnel

3.3 WMCO-QAP-6.06, Certification of Inspection, Examination and Test Personnel

3.4 WMCO-QAP-9.01, Identification, Classification, Preparation and Transfer of Quality Records

4.0 ATTACHMENTS

4.1 Attachment A - Development and Maintenance of Training and Certification Files

DEVELOPMENT AND MAINTENANCE OF TRAINING AND CERTIFICATION FILE

(1) Permanent File:

a. Obtain and file standard resumes for each QAD employee and other WMCO employees certified by QAD. Resumes should include the following information: (1) Title and Description of Specific Areas of Expertise; (2) Experience History Listing; (3) Education; (4) Certification and Licenses; (5) Professional Societies; (6) Technical Skills

b. Reference job descriptions and/or task qualification requirement documents for each QAD employee and other WMCO employees certified by the QAD and file in the individual's file. The Memorandum of Certification or Recertification are sufficient reference, for this requirement.

c. Reference existing documentation of training activities which support certification (See page 2 of the attachment for sample format).

d. Obtain and file existing documentation of participation in verification activities (See pages 3 and 4 of this attachment for sample format).

(2) Working File:

a. Create the working file by duplicating the contents of the permanent file.

b. Update with latest copy of documentation from permanent file.

c. Ensure that documentation of training activities which support certification is maintained in each individual's certification and training file.

d. Maintain audit, examination, testing and inspection participation records and other supporting documentation which are received throughout the year from the Section Managers and staffs or supervisors of other WMCO employees certified by the QAD.

e. Prior to each individual's initial certification or annual recertification, ensure that all documents (resumes, education, job description, etc.) are current and correct.

f. Initiate certification or recertification by sending permanent file plus updated documentation from working file to the certifying official.

g. Subsequent to each individual's initial certification or annual recertification, forward updated material to the permanent file.

No:	Rev:	Date:	Page:
WMCO-QAP-6.09	2	12/16/88	4 of 6

ATTACHMENT A
Page 2 of 4

FMPC
QUALITY ASSURANCE
TRAINING RECORD

Page ____ of ____

Name _____ SSN _____

Course No.	Course Title	Dates of Attendance

EXHIBIT

ATTACHMENT A
Page 3 of 4

FMPC
QUALITY ASSURANCE
PARTICIPATION IN AUDIT PROCESS
(Lead Auditor or Team Member)

Section Mgr Approval _____ Date _____

Name _____

AUDIT NUMBER	AUDIT TITLE/SCOPE	LOCATION OF AUDIT	DATE(S) OF AUDIT	FUNCTION*

EXHIBIT

838

No:	Rev:	Date:	Page:
WMCO-QAP-6.09	2	12/16/88	6 of 6

ATTACHMENT A
Page 4 of 4

FMPC
QUALITY ASSURANCE
PARTICIPATION IN VERIFICATION ACTIVITIES

Name: _____ Section Mgr. Approval: _____ Date: _____

Verific. Activity Number	Verification Activity Title/Scope	Location	Date(s)	Function*

*e.g., Performer, Supervisor

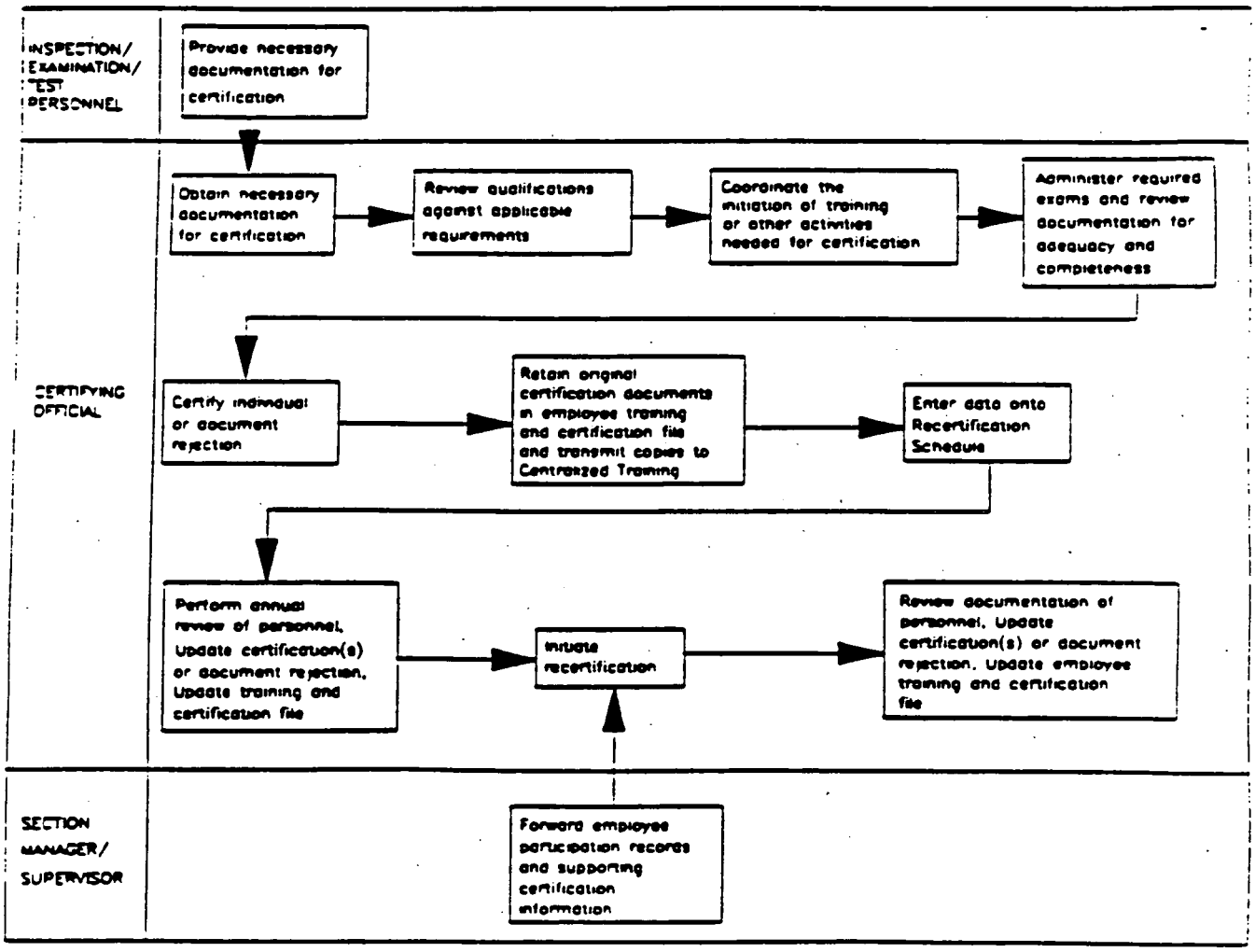
EXHIBIT

WESTINGHOUSE MATERIALS COMPANY OF OHIO - FMPC		DOCUMENT NUMBER: WMCO-QAP-6.0
QUALITY ASSURANCE PROCEDURE	SUBJECT: CERTIFICATION OF INSPECTION, EXAMINATION AND TEST PERSONNEL	REVISION: 4
		Page 1 of 18
	AUTHORIZED: (Vice President, Quality)	Effective Date: 07/31/90

COMPLETE REWRITE

1.0 SCOPE

This procedure applies to the qualification and certification of personnel who perform inspections, examinations, and tests such as product inspection, nondestructive examinations and concrete examinations.



2.0 PROCEDURE

Each employee at Westinghouse Materials Company of Ohio (WMCO) (for abbreviations, acronyms, and definitions see WMCO-QAP-1.05) who performs inspections, examinations and tests for purposes of verification of conformance with specification requirement or for purposes of acceptance will be certified in accordance with the following procedure prior to being assigned responsibility for performing that task.

2.1 Evaluation of Personnel Qualifications

Inspection/Examination/Test Personnel:

2.1.1 Provides the necessary documentation for certification, or recertification, to the appropriate Certifying Official (refer to Attachment A).

Certifying Official:

2.1.2 Obtains the necessary documentation for certification or recertification including resumes, training records and appropriate forms.

2.1.3 Reviews individual qualifications against the applicable qualification requirements (Attachment B) and completes appropriate sections on the certification form (Attachment C) for experience, education and training.

2.2 Conduct of Training for Personnel Certification

Certifying Official:

2.2.1 Coordinates the initiation of training (with the Coordinator, Training and Certification) or other activities needed for certification or recertification.

NOTE: Training, indoctrination, and orientation shall be developed, scheduled, and conducted in accordance with WMCO-QAP-6.03 and FMPC-102.

2.2.2 Administers written examinations for certification or recertification, as required.

2.2.3 Assures that a copy of the training records are transmitted to Centralized Training.

2.3 Documentation of Personnel Certification

Certifying Official:

2.3.1 Reviews the completed certification documentation for adequacy and completeness.

2.3.2 Ensures all qualification requirements (i.e., written examinations, physical, practical) are complete and acceptable and signs the certification form (Attachment C).

2.3.3 Retains the original certification documentation in the employee's training and certification file.

2.3.4 Enters the certification data on a Recertification Schedule, which shall include, as a minimum, the following information:

- o Identification of person certified
- o Certification expiration date
- o Eye examination due date
- o Certified method and any restrictions
- o Level of certification, as applicable
- o Annual evaluation due date

2.4 Annual Evaluation of Personnel

Certifying Official:

2.4.1 Reviews the original certification documentation and additional supporting documentation accumulated during the annual period and updates the certification form (Attachment C) for annual evaluation as outlined in Basic Qualification Requirements "Maintenance of Qualification" (Attachment B).

2.5 Recertification of Personnel

Certifying Official:

2.5.1 Performs recertification in accordance with the Basic Qualification Requirements "Maintenance of Qualification" (Attachment B) and documents recertification on the certification form (Attachment C).

2.6 Administration of Personnel Certification Records

Certifying Official:

2.6.1 Develops and maintains a list of WMCO personnel who are certified to perform specific quality assurance tasks within the scope of their assigned responsibility.

2.6.2 For each employee certified, develops and maintains a training and certification file in accordance with the following:

- o Obtain and file standard resumes. Resumes should include title and description of specific areas of expertise, experience history listing, education, certification and licenses, professional societies, and technical skills.
- o Reference job descriptions and/or task qualification requirement documents.
- o Reference existing documentation of training activities which support certification.

2.6.3 Updates the training and certification files whenever there are annual evaluations, certification extensions, or changes in certification status.

2.6.4 Inactive training and certification files are to be put into records storage in accordance with WMCO-QAP-9.01.

3.0 REFERENCES

3.1 WMCO-QAP-1.05, Abbreviations, Acronyms, and Definitions
3.2 WMCO-QAP-6.03, Development, Scheduling and Conduct of Quality Assurance Training/Indoctrination/Orientation
3.3 WMCO-QAP-9.01, Identification, Preparation, Storage and Maintenance of Quality Documents
3.4 FMPC-102, Training
3.5 ANSI/ASME NQA-1, Quality Assurance Program Requirements for Nuclear Facilities
3.6 ASNT/SNT-TC-1A, Personnel Qualification and Certification in Nondestructive Testing
3.7 B&PV Code, Appendix VII of Section III, Division 2. 1983 Edition, Qualifications of Concrete Inspection Personnel

4.0 ATTACHMENTS

4.1 Attachment A - Certifying Officials
4.2 Attachment B - Basic Qualification Requirements
4.3 Attachment C - Certification of Inspection, Examination, and Test Personnel
4.4 Attachment D - Record of Procedure Review
4.5 Attachment E - Personnel Training and Qualification

CERTIFYING OFFICIALS

The following identifies the certifying official for the three levels of inspection, examination, and test certification required:

INSPECTION, EXAMINATION, AND TEST CERTIFICATION	CERTIFYING OFFICIAL
Level III	VP Quality
Level II	Level III
Level I	Level III

CONCRETE EXAMINATION CERTIFICATION	CERTIFYING OFFICIAL
Certifying Official for Concrete Examiner	VP Quality
Concrete Examiner	Certifying Official for Concrete Examiner

PRODUCT INSPECTION CERTIFICATION	CERTIFYING OFFICIAL
Certifying Official for Product Inspectors	VP Quality
Product Inspectors	Certifying Official for Product Inspectors

BASIC QUALIFICATION REQUIREMENTS
INSPECTION, EXAMINATION AND TEST PERSONNEL

The qualification requirements common to all inspection, examination and testing functions are summarized below. The specific governing specification document, duties and responsibilities, and education and experience requirements for each of the inspection, examination and testing functions which require qualification are detailed in the specific qualification sheets for each method.

A. Duties and Responsibilities

Inspection, examination and test personnel verify implementation of requirements for product, purchased material, and construction and operation of facilities at the FMPC. A generic listing of duties and responsibilities is contained in Table 1.

B. Education and Experience

All inspection, examination and test personnel shall meet or exceed the minimum education and experience requirements listed for the area of certification. For Nondestructive Testing the requirements are listed in Table 2. Requirements for all other areas are listed in Table 3.

C. Training

1. Inspection, examination and test personnel shall have or shall be given appropriate training and orientation to develop their competence for performing required inspection, examination and tests. Competence of personnel for performance of the various inspection, examination and testing functions shall be developed through:

(a) Training in applicable codes, standards and regulations including ANSI/ASME NQA-1.

(b) Training in inspection, examination, and testing and on-the-job training under the direct supervision of a Level II or Level III inspection, examination and test technician or certifying official.

(c) Demonstrated knowledge of WMCO inspection, examination and test procedures.

2. The candidate shall complete and sign the Record of Procedure Review form (Attachment D) upon completion of review of assigned procedures. Concerns identified on the Record of Procedure Review shall be evaluated by supervision and the candidate and appropriate action taken. Upon completion of the review, the candidate shall complete a new copy of the Record of Procedure Review showing the resolution to the concerns.

BASIC QUALIFICATION REQUIREMENTS
INSPECTION, EXAMINATION AND TEST PERSONNEL
(Continued)

3. Formal classroom training will be conducted as required. When formal training is required, it shall be in accordance with WMCO-QAP-6.03 and FMPC-102.

D. Physical Requirements

1. Prior to initial certification and annually thereafter, inspection, examination and test personnel shall pass an eye examination as follows:

(a) The examination shall assure natural or corrected near-distance acuity in at least one eye such that the applicant is capable of reading a minimum of Jaeger Number 2 or equivalent type and size standard Jaeger test chart. The ability to perceive an Ortho-Rater minimum of 8 or similar test pattern is also acceptable.

(b) The examination shall demonstrate the capability of distinguishing and differentiating contrast between colors used in the method requiring certification. Demonstration of capability of distinguishing and differentiating contrast between colors shall be by color blind tests or actual workmanship samples. Examples of methods not requiring color vision are Dimensional Examinations, Ultrasonic Thickness Examinations, Radiographic Film Interpretation, Visual Weld Examination.

2. Individuals shall have necessary physique, stamina, range of motion, and dexterity needed to allow safe execution of assigned duties as demonstrated by the practical examination or test performance.

E. Examinations

1. Inspection, examination and test personnel shall pass any required written and/or practical examination as listed in the specific qualification requirements for each type of inspection, examination and test, prior to being certified.

2. Personnel who fail the written and/or practical examination shall wait, at least, thirty days or show evidence of having received suitable additional training as determined by the Certifying Official prior to re-examination.

BASIC QUALIFICATION REQUIREMENTS
INSPECTION, EXAMINATION AND TEST PERSONNEL
(Continued)

F. Certification Requirements

Inspection, examination and test personnel shall be certified as being qualified to conduct inspections, examinations and tests, and the certification records shall be established and maintained. In addition, the certification shall specifically identify which inspections, examinations and tests the individual is qualified to perform as well as any restrictions concerning the types of inspections, examinations and tests for which the certification shall be considered valid.

G. Maintenance of Qualifications

1. The job performance of inspection, examination and test personnel shall be reevaluated at periodic intervals not to exceed 3 years. Reevaluation shall be by evidence of continued satisfactory performance or redetermination of capability by an evaluation of the candidate's education, experience, training and either test results or capability demonstration. If during this evaluation or at any other time, it is determined by the responsible organization that the capabilities of an individual are not in accordance with the qualification requirements specified for the job, that person shall be removed from that activity until such time as the required capability has been demonstrated. Any person who has not performed inspection, examination or testing activities in his/her qualified area for a period of 1 year shall be reevaluated by a redetermination of required capability in accordance with the requirements stated above in order to maintain his/her certification.

2. Evidence of continuing satisfactory performance includes:

(a) Continuous performance in method certified

(b) Training in the method certified, either attending or instructing

(c) Practical demonstration of method

(d) Review of reports or records prepared, showing performance of applicable method

(e) Recertification by examination

BASIC QUALIFICATION REQUIREMENTS
INSPECTION, EXAMINATION AND TEST PERSONNEL
(Continued)

TABLE 1

INSPECTION, EXAMINATION, AND TEST PERSONNEL DUTIES AND CAPABILITIES

	NDE LEVEL			PROD. INSP.		CONCRETE	
	III	II	I	*C.O.	INSP.	*C.O.	EXAM.
Inspect materials and incoming materials for conformance to specified requirements such as physical dimensions (length, diameter, contour, etc.) and for quality defects (seams, nicks, mars, etc.).	x	x	x	x	x	x	x
Checks gauges/instruments and other measuring devices to verify conformance with specified limits	x	x	x	x	x	x	x
Maintains appropriate inspection records.	x	x	x	x	x	x	x
Plans inspections, examinations and tests.	x	x		x	x	x	x
Sets up tests and examinations, including preparation and setup of related equipment.	x	x		x	x	x	x
Monitors the performance of construction, modification, or maintenance activities.	x	x		x	x	x	x
Supervises & conducts training of inspection, examination and test personnel.	x	x		x		x	
Supervises and certifies inspection, examination and test personnel.	x			x		x	
Evaluates the validity and acceptability of inspection, examination and test personnel.	x	x		x	x	x	x
Evaluates the adequacy of specific programs used to train and certify inspection, examination and test personnel.	x			x		x	
Establishes techniques, prepares procedures and interprets codes/standards.	x			x		x	

* C.O. means Certifying Official

SPECIFIC QUALIFICATION REQUIREMENTS

NDE PERSONNEL

A. Duties and Responsibilities

Nondestructive examination (NDE) personnel perform nondestructive examinations in the construction, modification, or maintenance of the FMPC. The NDE verification work is performed in compliance with the American Society for Nondestructive Testing (ASNT) Recommended Practice Number SNT-TC-1A, Personnel Qualification and Certification In Nondestructive Testing; and in accordance with applicable WMCO procedures. NDE personnel perform, or monitor, the performance of activities related to nondestructive examination. Activities dealing with personnel qualifications are covered in ASNT Recommended Practice Number SNT-TC-1A.

B. Education and Experience Requirements

Level III - Shall be appointed by the Vice President, Quality, based on qualification factors contained in SNT-TC-1A. When the individual is qualified by examination, up to 50% of the experience requirements in accordance with SNT-TC-1A may be replaced by experience as a certified NDE Level II in other methods listed in SNT-TC-1A.

Level II and I - The minimum requirements are contained in Table 2.

1. A candidate having graduated from a formal NDE training institute such as a military or vocational school or college, and the documentation does not provide a breakdown of training hours per NDE method, may receive credit for training hours required for qualification based upon the Level III's review of the training course(s).

2. The number of hours of training and the required experience, per Table 2, for NDE personnel who perform only one operation of a specific NDE method or perform NDE examinations of a limited scope may be reduced. Certifications of a limited scope shall be documented and filed in the individual's training and certification file.

SPECIFIC QUALIFICATION REQUIREMENTS

NDE PERSONNEL
(Continued)

C. Examinations

1. Level III

Written examinations are not required for the appointment of a Level III candidate.

2. Level I and Level II

Prospective Level I and Level II NDE personnel shall pass a written examination which covers:

(a) Basic principles of the applicable method.

(b) Equipment, operating procedures, and test techniques that the applicant may encounter during specific assignments to the degree required by WMCO written practice.

(c) Specifications or codes and acceptance criteria used by WMCO in its nondestructive testing procedures.

3. Prospective Level I and Level II NDE personnel shall pass a practical examination which covers:

(a) The demonstration of familiarity with and the ability to operate the necessary test equipment, and record and analyze the resultant information to the degree required.

(b) At least one selected specimen should be tested and the results of the test analyzed by the candidate.

(c) The description of the specimen, the test procedure, including check points, and the results of the examination should be documented.

4. Examinations shall consist of three phases General, Specific and Practical. The designated minimum number of questions in SNT-TC-1A shall be used when applicable. Grading of examinations shall be weighted as follows:

- o General Score in % x .3
- o Specific Score in % x .3
- o Practical Score in % x .4

Final grade shall be the sum of the weighted scores.

TABLE 2
TRAINING AND EXPERIENCE REQUIREMENTS
NDE

	Level I					Level II							
	Examination Method (hrs)					Examination Method (hrs)							
Education	RT	UT	PT	MT	LTBT	RT	UT	PT	MT	LTBT	PPVI	TE	UTT
Completion with a passing grade at least 2 yrs of engineering or science study in a university, college, or technical school	29	24	4	8	2	35	40	4	4	2	1	1	1
High school graduation or equivalent.	39	40	4	12	2	40	40	8	8	4	4	2	2
Grammar school graduation, or demonstrated proficiency, or additional training.	88	40	12	24	2	80	80	16	16	4	4	2	2
	Total Work Time Experience (Months)												
All education levels as listed above	3	3	1	1	2hrs	9	9	2	3	1/2	4hrs	2hrs	2hrs

LTBT = Leak Testing Bubble Test
PPVI = Pilot Plant Vessel Inspection
TE = Thread Engagement
UTT = Ultrasonic Thickness Measurements

NOTES

1. For Level II certification, the experience should consist of time at Level I or equivalent. If a person is being qualified directly to Level II with no time at Level I, the required experience should consist of the sum of the times required for Level I and Level II and the required training should consist of the sum of the hours for Level I and Level II.

2. Initial experience may be gained simultaneously in two or more methods if the candidate spends a minimum of 25% of their work time on each method for which certification is sought, and the remainder of their work time claimed as experience is spent in NDT related activities.

TABLE 3

All other inspection, examination and test personnel shall meet the following education and experience requirements:

1. Three years of satisfactory performance as an inspector trainee in corresponding inspection, examination or testing activities; or

2. High school graduate or General Equivalency Diploma (GED) equivalent plus two years of related experience in equivalent inspection, examination, or testing activities; or

3. Completion of college-level work leading to an Associate Degree in a related discipline plus one year of related experience in equivalent inspection, examination, or testing activities; or

4. Graduation from four-year college plus six months of related experience in equivalent inspection, examination, or testing activities; or

5. Graduate of a Vocational-Technical school or Military school in an inspection discipline and six months of work experience in the applicable inspection method.

SPECIFIC QUALIFICATION REQUIREMENTS

CONCRETE INSPECTION PERSONNEL

A. Duties and Responsibilities

Concrete Inspection personnel verify implementation of requirements for construction or modification of facilities at the FMPC. The verification work is performed in accordance with applicable standards and codes, including ANSI/ASME NQA-1 and applicable WMCO procedures.

Concrete Examination personnel monitor the performing of constructor activities including construction modification and maintenance activities.

B. Education and Experience Requirements

The minimum education and experience requirements are listed in Table 3.

C. Examination

None Required

D. Certification

1. The Certifying Official shall perform an evaluation of the candidates education, experience and training for certification.

2. Upon satisfactory completion of the evaluation and eye examination, the Certifying Official shall document the certification on Attachment C and list any restrictions that apply for certification.

3. Certifying Official for Concrete Examiners shall be appointed by the Vice President, Quality based on qualification factors contained in Table 3.

4. If an individual cannot be certified a written justification for non-certification shall be prepared and forwarded to the individual.

SPECIFIC QUALIFICATION REQUIREMENTS
PRODUCT INSPECTION PERSONNEL

A. Duties and Responsibilities

Product Inspection Personnel verify that product produced at the FMPC meets customer requirements. This is accomplished through the use of various specifications and procedures applicable to Quality Operations.

B. Education and Experience Requirements

The minimum education and experience requirements are listed in Table 3.

C. Examination

None Required

D. Certification

1. The Certifying Official shall perform an evaluation of the candidate's education, experience and training for certification. Deviation from the minimum requirements listed in Table 3 shall be as follows:

(a) For Product Inspection the requirement for experience may be waived after the candidate(s) has had specific training for the application being certified and demonstrated their skills to perform the inspection to written instructions. Documentation of the training and capability demonstration shall be on a Personnel Training and Qualification form (Attachment E).

2. Upon satisfactory completion of the evaluation and eye examination, the Certifying Official shall document the inspector's certification or Certifying Official for Product Inspectors, as applicable, on Attachment C and list any restrictions that apply for certification.

3. Certifying Official for Product Inspectors shall be appointed by the Vice President, Quality based on qualification factors contained in Table 3.

4. If an individual cannot be certified a written justification for non-certification shall be prepared and forwarded to the individual.

CERTIFICATION OF INSPECTION, EXAMINATION AND TEST PERSONNEL

WMCO

CERTIFICATION OF INSPECTION, EXAMINATION AND TEST PERSONNEL

NAME.	BADGE NO..	DATE.
METHOD	☐ CERTIFICATION ☐ RECERTIFICATION	LEVEL (if applicable):
CERTIFICATION LIMITATIONS (if applicable)		

EDUCATION/EXPERIENCE/TRAINING

EDUCATION ☐ SEE ATTACHED INFORMATION/RESUME

SCHOOL	FROM	TO	MAJOR COURSE OF STUDY

EXPERIENCE ☐ SEE ATTACHED INFORMATION/RESUME

ORGANIZATION	FROM	TO	METHOD(S) & RELATED ACTIVITIES

TRAINING ☐ SEE ATTACHED INFORMATION/RESUME

EXAMINATIONS/EVALUATIONS

WRITTEN		PHYSICAL	
SCORE.	DATE.	TYPE.	DATE PASSED.

SIGNATURES/DATES

DATE CERT./RECERT.	DATE OF EXPIRATION.	CERTIFYING OFFICIAL.

ANNUAL EVALUATION

DATE OF SAT. COMPLETION:	CERTIFYING OFFICIAL.	DATE OF SAT. COMPLETION:	CERTIFYING OFFICIAL.

FMPC

RECORD OF PROCEDURE REVIEW

NAME	BADGE NO	PROCEDURE NUMBER
	OPERATION	

I have read the above procedure on this date and fully understand it with the following exceptions that need to be clarified *(Check appropriate box)*:

☐ a. None

☐ b. Step _____ should be added/deleted.

Should read: _____

☐ c. Do not understand fully the following steps: _____

Signed: _____ Date: _____

855

FMPC

PERSONNEL TRAINING AND QUALIFICATION

Training Subject: _____

Assigned Duties: _____

Name: _____

Department: _____

I have received the identified training and understand the requirements to perform the assigned duties for the specified activity.

Employee Signature: _____ Date: _____

The employee has exhibited the knowledge and technical skill to perform the assigned duties for the specified activity and is qualified with an expiration date of: _____

Qualification Area: _____

Manager: _____

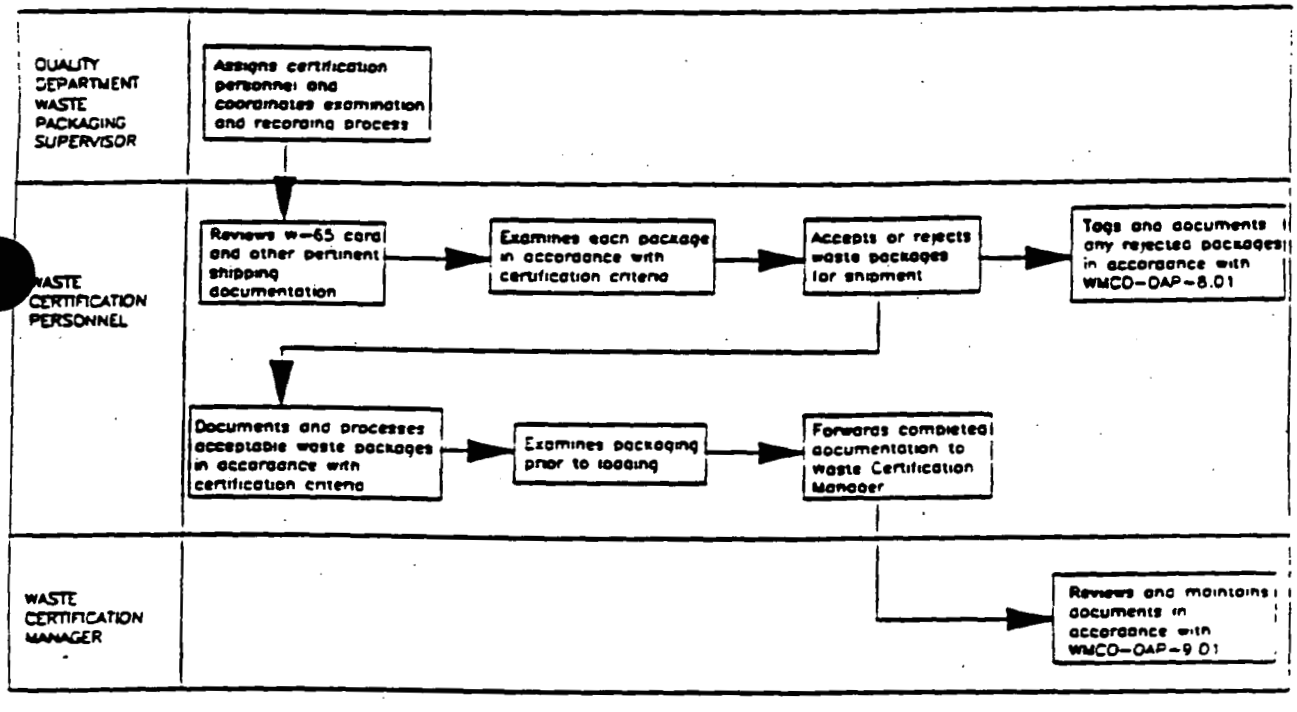
Date: _____

ESTINGHOUSE MATERIALS COMPANY OF OHIO - FMPC		DOCUMENT NUMBER: WMCO-QAP-12.09
QUALITY ASSURANCE PROCEDURE	SUBJECT: CERTIFICATION OF WASTE PACKAGE EXAMINATION AND SEALING FOR OFF-SITE SHIPMENT	REVISION: 3 Page 1 of 19
	AUTHORIZED: (Vice President, Quality)	Effective Date: 09/11/90

COMPLETE REWRITE

1.0 SCOPE

This procedure outlines the method for the certification of waste materials at the Feed Materials Production Center (FMPC) (for additional abbreviations, acronyms, and definitions refer to WMCO-QAP-1.05) prior to offsite shipment, and is applicable to Low-Level Radioactive Waste (L-LRW) only.



2.0 PROCEDURE

2.1 Industrial Health and Safety Requirements

2.1.1 Leather palm gloves shall be worn by when handling sharp-edged or abrasive materials, containers, lids, and banding materials.

2.1.2 Safety glasses shall be worn by all personnel at all times in the process area, except when another type of eye protection equipment is specified.

2.1.3 A half-mask respirator equipped with radionuclide (purple) cartridges as specified by the Radiological Safety (RS) Technician shall be available for each person working with waste material and shall be used at the direction of the RS Technician.

2.1.4 Any circumstances of event which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake RS for evaluation. The involved personnel shall report to Medical Services at the end of their shift or as directed to submit a urine sample and again report at the start of their next shift to submit another urine sample.

2.1.5 Spill incidents involving RCRA materials shall be reported to the Spill Reporting Advisor in Environmental Compliance in accordance with Site Procedure FMPC-503, "FMPC Spill Incident Reporting and Cleanup."

2.2 General Requirements for Packaging L-LRW

2.2.1 All certification personnel verifying packaging and shipment of L-LRW to the Nevada Test Site (NTS) be trained and qualified on this procedure, NVO-325, and the Waste Certification Program Plan in accordance with Quality Assurance Procedure WMCO-QAP-6.11, Qualification of Waste Package Certifiers, or on Quality Assurance Procedure WMCO-QAP-6.12, Qualification of Waste Certification Officials.

2.2.2 Materials prohibited by NVO-325 and listed on the Prohibited Materials List (Attachment A) shall not be packaged for shipment.

2.2.3 Only materials approved by the NTS, Solid Waste Compliance and Waste Management shall be shipped. The Waste Certification Manager is responsible for making this information available to all personnel performing verification and certification work.

2.2.4 Only container designs approved for shipment by the NTS that meet the requirements of NVO-325 shall be used. For the purpose of this procedure only those container types verified as acceptable by the Waste Certification Manager, or another Certification Official, are to be used.

2.2.5 All packaging shall be in strong, tight containers that do not leak under normal transport and handling conditions, and which meet the criteria of Title 49 CFR 173.431 and 173.425.

2.2.6 Marking and labeling shall be in accordance with Title 49 CFR 172, Subparts D & E, as follows:

a. Container Number
b. Shipment Number
c. Gross Weight
d. Radioactive markings
e. Other marking and labeling as required for the packaged material

2.2.7 Packages certified and held for shipment must be secure and protected from weather and other adverse conditions having the potential to create an unacceptable condition. Covered or enclosed storage, which includes covering with plastic or tarpaulin are appropriate protective measures. If appropriate measures have not been taken, all packages concerned shall be reexamined by Certification personnel and recertified on the basis of the reexamination results.

2.3 Examination of Metal Drums Prior to Filling

Metal drum examination by Certification prior to filling is not a routine requirement, but may be performed on an audit basis as follows:
Physical Inspection - 50% of lot
W-65 Card comparison - 10% of lot
W-65 Card check for completeness and accuracy - 100% of lot
Results of examination shall be documented with an appropriate check list and signed by Certification personnel performing the examination.
Criteria for examination shall include as a minimum:

2.3.1. Except for light rust, drum must be clean and empty.

2.3.2. Examine all surfaces of the drum and lid and reject for any of the following conditions.

a. A breach (a hole, crack, gash, etc.)
b. A dent or bulge which has creased, gouged, or may have otherwise significantly weakened the metal.
c. A dent greater than 1" in depth or extending over 6" in any direction.
d. A significant dent in the bottom rim. A significant dent is one that compromises the integrity of the container.
e. A significant dent in a rolling hoop. Each deficiency is to be evaluated for affect on the integrity of the container.
f. Rust causing exfoliation (scale), sever pitting, or other conditions having a detrimental effect on the serviceability of the waste container. (Small areas of exposed base metal, minor to moderate scratches, and slightly rusted spots are acceptable.)
g. Any deformation or out-of-round condition affecting the integrity of the sealing surface.

2.4 Examination of Metal Drum Filling

The filling of drums with low level radioactive waste materials shall be monitored by Certification personnel. The results of examination shall be documented on the "Waste Certification Examination Report 'Drum Filling'", QAC-881115-5 (Attachment B), and signed by those performing the examination. As a minimum, the examination shall include:

2.4.1 Visual verification that the materials packaged conform in appearance to the materials listed on the waste generator's certification record (currently W-65 card, FMPC-CONT-1945-XX, Attachment C).

2.4.2 If material is a respirable fine, verify that double containment is used in packaging.

2.4.2.1 Plant 8 residues shall be packaged in 48-gallon jug head type lever lock drum, sealed with a sequentially numbered wire seal, and contained in a 55-gallon bolt closure type overpack drum.

2.4.2.2 Other miscellaneous materials may be overpacked with double containment, provided neither container will leak in normal handling and transport.

NOTE: As of the date this procedure is issued, approval has not been received to resume shipment of asbestos to the NTS. Also, there is no assurance that when and if shipment is resumed that asbestos in drums will be acceptable.

2.4.3 Verify that numbered seals are being used to secure inner containers.

2.4.4 Verify that bolt ring closure is used on outer drum, flange is in down position, and lid is secure. (If in doubt, grasp bolt ring with gloved hand and generate movement to determine if ring is loose.)

2.5 Examination of Metal Drums Prior to Loading Trailers For Transfer to Plant 1 (Waste Operations)

Examine packaged drums prior to loading on trailers for transfer to the Plant 1 Area. These drums are to be examined 100% on a best effort basis, and responsibility shall not be waived without the approval of the Quality Department Waste Packaging Supervisor who shall notify Operations and Waste Management supervision of Certification's inability to perform the examination.

2.5.1. Receives the "Item Production/Certification/Identification" card FMPC-CONT-1945-XX (W-65 Card, Attachment C)

2.5.2 The lid shall be properly seated on the drum and held in place by a bolt ring closure. If bolt and flanges are not lower than rest of ring, then ring is positioned upside down.

2.5.3 Examine all surfaces of the drum and lid and reject for any of the following conditions.

a. A breach (a hole, crack, gash, etc.)
b. A dent or bulge which has creased, gouged, or may have otherwise significantly weakened the metal.
c. A dent greater than 1" in depth or extending over 6" in any direction.
d. A significant dent in the bottom rim. A significant dent is one that compromises the integrity of the container.
e. A significant dent in a rolling hoop. Each deficiency is to be evaluated for affect on the integrity of the container.
f. Rust causing exfoliation (scale), sever pitting, or other conditions having a detrimental effect on the serviceability of the waste container. (Small areas of exposed base metal, minor to moderate scratches, and slightly rusted spots are acceptable.)
g. Any deformation or out-of-round condition affecting the integrity of the sealing surface.

2.5.4 Complete "Waste Certification Examination Report 'Prior to Transfer'", QAC-881115-3 (Attachment D).

2.6 Examination of Wood Boxes Prior to Filling

On an occasional basis, wood boxes will be examined prior to filling to verify compliance. The examination shall be documented on a checklist, and shall include verification of the following:

2.6.1 The box design is approved for shipment to NTS.

2.6.2 The box is not damaged or seriously deteriorated (i.e. rot).

2.6.3 The box is free of holes, splits, or voids between plywood panels and framework.

2.6.4 The box is free of protruding fasteners.

2.6.5 The box is labeled, on opposite sides, with the manufacturer's name and shipping box serial number.

2.6.6 Lids, if in place, fit securely into the top recesses of the box and are free of severe warping, and voids.

2.6.7 Each box has three (four if the large 124 cu. ft. box) 1-1/4" width straps equidistant and horizontally around the perimeter.

2.6.8 Each box has a preformed plastic or 6-mil (0.006") sheet plastic liner. A preformed liner is required if box is to be filled with loose material such as scrap wood, metal, soil, or masonry.

2.6.9 Each box has a minimum of one 50 lb. bag of uncalcined diatomaceous earth (Dicalite) spread evenly in the bottom of the box, or an absorbent pad, covering the liner in the bottom of the box.

2.7 Monitoring of Wood Box Filling Prior to Closure

Wood box filling is to be monitored occasionally to verify compliance. Observance may include the filling process, or may only include observance after filling prior to closure. The results of the monitoring shall be documented on a checklist and shall verify the following:

2.7.1 A prohibited materials list is displayed in the loading area.

2.7.2 Box has a 6 mil (0.006") sheet plastic or a preformed plastic liner. A preformed liner is required if box is to be filled with loose material such as scrap wood, metal, soil, or masonry.

NOTE: A plastic liner is not required if box is being loaded with heavy metal items.

2.7.3 When loading with heavy items, floor seams and one foot up each corner are caulked.

2.7.4 Box contents agrees with documentation on FMPC-CONT-1945-XX (W-65 card, Attachment C).

2.7.5 No prohibited items are being or have been packaged.

NOTE: Depending on the contents, all materials in a filled package may not be visible. The examiner should view as much of the contents as possible by looking into the box from different angles, and making use of inspection equipment such as mirrors, boroscopes, etc. as available.

2.7.6 Verify that visible internal structure of box is undamaged.

2.7.7 Sheets of wet-strength polypropylene/pulp super absorbent fabric have been placed in the bottom of the box or that one 50 lb. bag of uncalcined diatomaceous earth has been added and spread evenly in the bottom of the box.

2.7.8 If the box contains soil, wet-strength polypropylene/pulp super absorbent fabric or one 50 lb. bag of uncalcined diatomaceous earth has been added in alternating layers accounting for moisture level of soil.

2.7.9 Complete "Waste Certification Wood Box Examination Filling," QAC-881206-1 (Attachment E).

2.8 Monitoring Wood Box Closure Activities

Wood box closure activities shall be monitored occasionally to verify compliance. Results of the monitoring shall be documented on a check list and shall verify the following:

2.8.1 Plastic is folded over contents of box.

2.8.2 Form FMPC-CONT-1945-XX, "Item Production/Certification/Identification" card (W-65 Card, Attachment C) is filled out properly.

2.8.3 No moisture is visible on either the inside or the outside of the box.

2.8.4 RTW Silicone Adhesive, or equivalent, has been applied in a continuous bead (1/4 inch minimum) between lid and box.

2.8.5 Box is banded vertically with three 1-1/4 inch metal bands, one band on each end of the box and one in the middle of the box.

2.8.6 Box lid shall be fastened using ten penny nails on 3 inch centers and two sixteen penny galvanized nails on each side panel into two inch by four inch on top panel (8 places) providing proper closure.

2.8.7 Box does not exceed 5000 pounds gross weight.

2.8.8 Check for damage to the box and lid. No holes, cracks, or deterioration (i.e. rot) which would permit leakage or lessen the structural integrity of the box are acceptable.

2.8.9 Complete "Waste Certification Wood Box Examination Filled Box," QAC-881206-2 (Attachment F).

2.9 Examination of Metal Boxes Prior to Filling

2.9.1 Metal box examination by Certification prior to filling is not required but should be performed on a monitoring basis. Criteria for examination shall include as a minimum:

a. Metal box must be a light color, usually white for Uranium contaminated rubble, gray for Thorium contaminated rubble.
b. Containers must be clean and empty.
c. Each container shall be well constructed of steel with all seams adequately welded.
d. The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.
e. The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.9.2 For all box designs having drain plugs, verify that box has been checked for a drain plug, and if found the drain plug has been tightened.

a. A red dot on the lower left hand front of the box shall indicate that the plug has been tightened.
b. A black dot on the lower left hand front of the box shall indicate that there is no drain plug.
c. All metal boxes shall have either a red or black dot marked.

2.10 Examination of Metal Boxes at Closure After Filling

2.10.1 Metal box must be a light color, usually white for Uranium contaminated rubble, gray for Thorium contaminated rubble.

2.10.2 Containers must be clean.

2.10.3 Each container shall be well constructed of steel with all seams adequately welded.

2.10.4 The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.

2.10.5 The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.10.6 For all box designs having drain plugs, verify that box has been checked for a drain plug, and if found the drain plug has been tightened.

a. A red dot on the lower left hand front of the box shall indicate that the plug has been tightened.
b. A black dot on the lower left hand front of the box shall indicate that there is no drain plug.
c. All metal boxes shall have either a red or black dot marked.

2.10.7 If container has been observed during loading operation ensure that wet-strength polypropylene/pulp super absorbent fabric or uncalcined diatomaceous earth is properly placed in and around the container so that all moisture is absorbed and no free liquid is visible.

2.10.8 If steel boxes are used as overpack containers for previously inspected containers, no further inspection of the contents is required.

2.10.9 Examine container at closure as follows :

a. Verify form FMPC-CONT-1945-XX (W-65 Card, Attachment C) is completed accurately.
b. Verify that Radioactive material markings (2 sides) and FMPC container number markings are present and legible.
c. Verify that all unnecessary marking have been removed or covered.
d. Verify that gross weight does not exceed 6,000 pounds.
e. Verify marked gross weight value is consistent with shipment paperwork.
f. Verify that a foam rubber or similar type gasket is on the sealing surface of the lid, or the lid is sealed with a durable sealant.
g. Verify that lid is properly placed on the box.
h. Verify locking pins required for the container are in place with the locking notches below the straps and fully engaged to full thickness of strap over entire locked surface edge of notch.
i. If bolted retainer ring is on, verify all bolts are securely in place.
j. Verify the lid is secured with two 1-1/4" steel straps.

2.10.10 For boxes filled with construction rubble, complete the "Construction Rubble Examination Metal Boxes" checklist, QAC-881206-3 (Attachment G).

2.11 <u>Examination of Sea/Land Cargo Containers Prior to Filling</u>

2.11.1 Sea/Land container examination by Certification prior to filling is not required but should be performed on a monitoring basis. Criteria for examination shall include as a minimum:

2.11.1.1 Containers must be clean and empty.

2.11.1.2 Each container shall be well constructed of steel with all seams adequately welded.

2.11.1.3 The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.

2.11.1.4 The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.11.1.5 Verify a tare weight is marked on the container.

2.11.1.6 Verify that a 1/4" minimum continuous bead of RTW Silicone Adhesive Sealant, or equivalent, has been applied on all seams and corners of the container interior.

2.11.1.7 Verify that the container floors have been lined with wet-strength polypropylene/pulp super absorbent fabric, blotter paper, or uncalcined diatomaceous earth.

2.11.1.8 Verify that the absorbent fabric, blotter paper or uncalcined diatomaceous earth has been covered with a 0.006 mil thick plastic sheet that extends at least 36 inches up each side of the container.

2.11.1.9 Verify that plywood has been placed on the container floor and up to four feet in height on all sides. If container is top loading Sea/Land container, verify that the entire floor and sides are lined with plywood.

2.11.1.10 Verify that all container outside markings not related to the load have been removed.

2.11.1.11 Verify that a prohibited materials list has been attached to the container in a visible location.

2.11.1.12 After the container has been filled, verify that the back ledge of the container is clean.

2.11.1.13 Verify that the lid/door opening has been lined with 0.006 mil thick plastic or similar material to a height of 18 inches.

2.11.1.14 Verify that the load inside the container has been secured with plywood and 2" X 4" wood, or other similar type materials.

2.11.1.15 Verify that all doors and around all sealing surfaces have been caulked with RTW Silicone Adhesive Sealant, or the equivalent.

2.12 <u>Examination of Sea/Land Cargo Containers at Closure After Filling</u>

2.12.1 Each container shall be well constructed of steel with all seams adequately welded.

2.12.2 The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.

2.12.3 The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.12.4 If Sea/Land container has been observed during loading operation ensure that wet-strength polypropylene/pulp super absorbent fabric or uncalcined diatomaceous earth is properly placed in and around the container so that all moisture is absorbed and no free liquid is visible.

2.12.5 Examine Sea/Land containers at closure as follows :

a. Verify form FMPC-CONT-1945-XX (W-65 card, Attachment C) is completed accurately.
b. Verify that all unnecessary marking have been removed or covered.
c. Verify that caulking is around all doors and around all sealing surfaces, and that the metal doors are securely closed, and two metal bands secure the two door latches together.
d. If Sea/Land container is top loading, verify that a foam rubber or similar type gasket is on the sealing surface of the lid, or the lid is sealed with a durable sealant.
e. Verify that a prohibited materials list has been attached to the container in a visible location.

2.13 <u>Examination of Baled Trash</u>

2.13.1 Examine baled trash as follows:

a. Each bale shall have minimum of six (6) bands or straps for binding.
b. Free liquids are prohibited. Be watchful of liquids in pockets of water in a bags. Condensation in plastic bags is acceptable unless excessive.
c. Prohibited materials are not allowed in accordance with "Prohibited Materials List" (Attachment A).

<u>NOTE</u>: Reject bale if prohibited materials or suspicious items (i.e. asbestos) are present, and mark W-65 card accordingly.

d. "Bale Examination" checklist (Attachment H) is completed.
e. Using a barrel grab lift and turn the bale to check underside.
f. Ensure that form FMPC-CONT-1945-XX (W-65 card, Attachment C) is complete and accurate for each bale.
g. Initial and date the W-65 card after examining the card and bale.

<u>NOTE</u>: If bale is designated wet (to be sent to Plant 1 for drying) initial card but note that bale is wet (unacceptable for shipment). Wet bales will be recertified at Plant 1 prior to packaging for shipment.

h. Make entry in log book at the baler.
i. Enter bale inspection on computer in Waste Packaging Office.

3.0 REFERENCES

3.1 NVO-325, Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements
3.2 FMPC-503, FMPC Spill Incident Reporting and Cleanup
3.3 FMPC-704, Minor Event Reporting System
3.4 WMCO-QAP-1.05, Abbreviations, Acronyms, and Definitions
3.5 WMCO-QAP-8.01, Deviation and Corrective Action Reporting
3.6 WMCO-QAP-9.01, Designation, Preparation, Storage and Maintenance of Quality Documents
3.7 WMCO-QAP-12.12, Certification of Loading and Shipment of Low-Level Radioactive Waste

4.0 ATTACHMENTS

4.1 Attachment A - Prohibited Materials List
4.2 Attachment B - Waste Certification Examination Report, "Drum Filling"
4.3 Attachment C - Item Production/Certification/Identification Card
4.4 Attachment D - Waste Certification Examination Report, "Prior to Transfer"
4.5 Attachment E - Waste Certification Wood Box Examination Filling
4.6 Attachment F - Waste Certification Wood Box Examination Filled Box
4.7 Attachment G - Construction Rubble Examination Metal Boxes
4.8 Attachment H - Bale Examination

PROHIBITED MATERIALS

Nonradioactive Material

Pressurized Vessels

Explosives

Radioactive Gases

High-Level Waste

Pyrophoric Materials

Toxic or Poisonous Materials

Liquid Metals

Flammable Substances

Alkaline Metals

Reactive Materials (could cause fire)

Liquid Organic Waste or Waste that contains any free liquid

Ashes, Dry Powders or Respirable Fines (unless immobilized or a double containment package is used)

If the Waste is Ionized or Immobilized the pH must be greater than 4.

3511

Attachment B
Page 1 of 1

WASTE CERTIFICATION EXAMINATION REPORT
"DRUM FILLING"

WASTE CERTIFICATION
EXAMINATION REPORT
"DRUM FILLING"

DATE: _____ LOCATION: _____

CERTIFICATION SPECIALIST MATERIAL: _____

_____

LOT NO.: _____

DRUM #	INSIDE DRUM	OUTSIDE DRUM	NO LIQUIDS	I.S. LID	MIL. OK	SEAL OK .	W-65 COMP.	INITIAL ALL OK

Deviations Noted: Yes_____ No_____

Deviation Corrective Action Completed :

Production Supervisor: _____ Date: _____

Waste Certification Specialist: _____ Date: _____

QAC-881115-5, Rev.1 (09/23/89)

Attachment C
Page 1 of 1

ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION CARD

CARD XX **ITEM PRODUCTION/CERTIFICATION/IDENTIFICATION** 129702

P. O. NO.	SOURCE	CLASS	MATERIAL TYPE	LOT SEQUENCE NO.	DATE MO	DAY	YEAR	SHIFT	BADGE NO.	PACKAGE NO.

SEAL NUMBER	SEAL DATE MONTH	DAY	YEAR	PACKAGE PHYSICAL CERTIFICATION	YES	NO	PLANT	PROD. MBA
				EMPTY CONTAINER AT START				
				RUST HOLES OR DENTS				
				MATERIAL IS AS CODED			PLANT TO	MBA TO
WASTE DESCRIPTION AND COMMENTS				PROHIBITED MATERIALS				
				LIQUIDS IN CONTAINER				
PACKAGE TYPE				MINIMUM OF VOID SPACE				
PACKAGE SIZE				PACKAGE SECURED				
				DRAIN PLUG SECURED				

GROSS WEIGHT

TARE WEIGHT

NET WEIGHT

GENERATOR SIGNATURE

SUPERVISOR SIGNATURE DATE

FMPC-CONT-1946-EX (REV. 12/19/86)

*U.S. GPO: 1990-749-781

3511

Attachment D
Page 1 of 1

WASTE CERTIFICATION EXAMINATION REPORT "PRIOR TO TRANSFER"

WASTE CERTIFICATION
EXAMINATION REPORT
"PRIOR TO TRANSFER"

(Rev. 8/31/88)

DATE: _____ LOCATION: _____

CERTIFICATION SPECIALIST _____ MATERIAL: _____

LOT NO.: _____

DRUM #	O.S. DRUM	O.S. LID	BOLT	RING	DRUM I.D.	WTS. OK .	W-65 (10%)	ALL OK

Deviations Noted: Yes _____ No _____

Deviation Corrective Action Completed :

Production Supervisor: _____ Date: _____

Waste Certification Specialist: _____ Date: _____

Attachment E
Page 1 of 1

WASTE CERTIFICATION WOOD BOX EXAMINATION FILLING

WASTE CERTIFICATION
WOOD BOX EXAMINATION
FILLING

INFORMATION

MIL. TYPE: _____ BOX S/N(): _____

REQUESTOR: _____ LOCATION : _____

EXAMINATION (Waste Certification)

DATE CORRECTED	STATUS	INITIALS

CERTIFICATION (Waste Certification)

Deviation Reportable: YES_____ NO_____

Nonconformance Record Number:_____

Date Deviation Corrected:_____

I hereby certify the above woodbox has been examined to the best of my knowledge, as defined by the above criteria, requirements of this procedure, & SOP 20-C-601.

Signed:_____
(Waste Certification)

Date: _____

QAC-881206-1, Rev. 1 (12/15/88)

Attachment F
Page 1 of 1

WASTE CERTIFICATION WOOD BOX EXAMINATION
FILLED BOX

WASTE CERTIFICATION
WOOD BOX EXAMINATION
FILLED BOX

INFORMATION

MIL TYPE: _____ BOX S/N(): _____

GENERATOR: _____ LOCATION : _____

EXAMINATION

	INITIALS
1. Check for damage to the box and lid. Verify no holes, cracks or defects which would permit leakage or lessen the structural integrity of the box.	_____
2. Verify clarity of shipment number and container number.	_____
3. Verify Gross Weight is marked on each box.	_____
4. Verify three metal bands are secure and located vertically with one in the center of the box and the remaining two equidistant from the center, one on each side, or verify that large boxes are secured with four evenly spaced bands.	_____
5. Verify no standing water on the box.	_____
6. Verify W-65 card information matches information marked on box.	_____
7. Verify the existence of the Low Specific Activity (LSA), Reportable Quantity (RQ), label identification, as applicable.	_____
8. Verify the existence of durable sealant compound between the lid and the box.	_____
9. Verify the existence of nails, attaching the lid to the box.	_____

CERTIFICATION (Waste Certification)

Deviation Reportable: YES_____ NO_____

Nonconformance Record Number:_____

Date Deviation Corrected:_____

I hereby certify the above woodbox has been examined to the best of my knowledge, as defined by the above criteria, requirements of this procedure, & SOP 20-C-601.

Signed:_____
(Waste Certification)

Date: _____

QAC-881206-2, Rev. 2 (12/15/88)

CONSTRUCTION RUBBLE EXAMINATION METAL BOXES

CONSTRUCTION RUBBLE EXAMINATION METAL BOXES

RECORD :
Container S/N : _____ Date : _____

PRIOR TO LOADING:

1. Verify that the container has no holes, tears or creases. _____
2. Verify drain plug is installed, if applicable _____
3. Verify the container lid is not damaged (including the gasket). _____
4. Verify that one bag of Uncalcined diatomaceous earth or absorbent pad is placed on top of soil. _____
5. Only correct materials are placed in container. _____
6. No free liquids are visible in the container. _____
7. Verify only unsaturated wood is used as topping-off material. _____
8. Verify gross weight of container does not exceed 6000 lbs. _____
9. Verify caulking/gasket, banding (2) and pins are all in place. _____
10. Verify the data record (W-65) is filled out correctly. _____

Note : Any deviations from the checklist will require a deviation report to be issued and a Nonconformance tag placed on the container. The deviation must be resolved prior to removal of the Nonconformance tag.

Deviation Noted: Yes_____ NO_____

I hereby certify that the above checklist has been completed and witness that the above items are correct to the best of my knowledge.

Signed : _____ Date : _____
(Waste Certification)

QAC-881206-3, Rev. 1 (12/08/88)

3511

Attachment H
Page 1 of 1

BALE EXAMINATION

BALE EXAMINATION

BALE NUMBER_____ DATE_____

EXAMINATION:

1. Verify correct materials are placed in bale where visible. _____

2. No visual evidence of free liquids or seepage from bale, nor is material in bale saturated to the extent that seepage could be expected during bundling, handling and transport. _____

3. Verify the data record (W-65) is filled out correctly. _____

NOTE: Any deviations from the checklist will require a deviation report to be issued and a Nonconformance tag placed on the container. The deviation must be resolved prior to removal of the Nonconformance tag.

Deviation Noted: Yes_____ No_____

I hereby certify that the above checklist has been completed and witness that the above items are correct to the best of my knowledge.

Signed:_____ Date:_____
(Waste Certification)

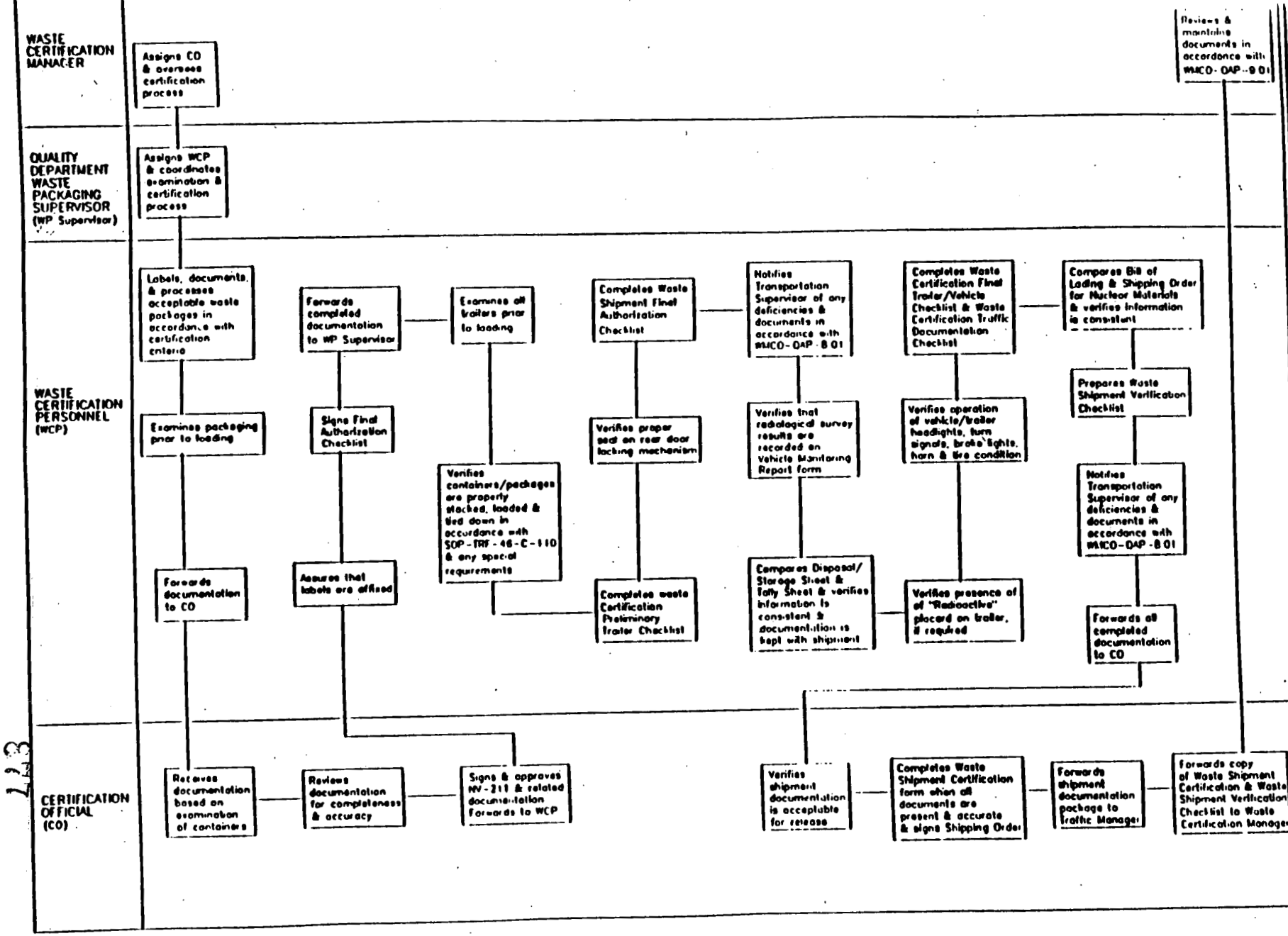
UNCONTROLLED COPY

TINGHOUSE MATERIALS PANY OF OHIO - FMPC		DOCUMENT NUMBER: WMCO-QAP-12.12
QUALITY ASSURANCE PROCEDURE	SUBJECT: CERTIFICATION OF LOADING AND SHIPMENT OF LOW-LEVEL RADIOACTIVE WASTE	REVISION: 2 Page 1 of 40
	AUTHORIZED (Vice President, Quality)	Effective Date: 09/11/90

COMPLETE REWRITE

1.0 SCOPE

This procedure establishes a detailed method for the certification of Low-Level Radioactive Waste (L-LRW) packages (for additional abbreviations, acronyms, and definitions refer to WMCO-QAP-1.05), the loading of L-LRW materials and the examination of highway transport vehicles for exclusive use shipments only at the Feed Materials Production Center (FMPC) to ensure compliance with applicable federal regulations.


WASTE CERTIFICATION MANAGER
QUALITY DEPARTMENT WASTE PACKAGING SUPERVISOR (WP Supervisor)
WASTE CERTIFICATION PERSONNEL (WCP)
CERTIFICATION OFFICIAL (CO)
Assigns CO & oversees certification process
Assigns WCP & coordinates examination & certification process
Labels, documents, & processes acceptable waste packages in accordance with certification criteria
Examines packaging prior to loading
Forwards documentation to CO
Forwards completed documentation to WP Supervisor
Signs Final Authorization Checklist
Assures that labels are affixed
Examines all trailers prior to loading
Verifies containers/packages are properly stacked, loaded & tied down in accordance with SOP-TRF-46-C-110 & any special requirements
Completes Waste Shipment Final Authorization Checklist
Verifies proper seal on rear door locking mechanism
Completes waste Certification Preliminary Trailer Checklist
Notifies Transportation Supervisor of any deficiencies & documents in accordance with WMCO-QAP-8.01
Verifies that radiological survey results are recorded on Vehicle Monitoring Report form
Compares Disposal/Storage Sheet & Tally Sheet & verifies information is consistent & documentation is kept with shipment
Completes Waste Certification Final Trailer/Vehicle Checklist & Waste Certification Traffic Documentation Checklist
Verifies operation of vehicle/trailer headlights, turn signals, brake lights, horn & tire condition
Verifies presence of of "Radioactive" placard on trailer, if required
Compares Bill of Lading & Shipping Order for Nuclear Materials & verifies information is consistent
Prepares Waste Shipment Verification Checklist
Notifies Transportation Supervisor of any deficiencies & documents in accordance with WMCO-QAP-8.01
Forwards all completed documentation to CO
Reviews & maintains documents in accordance with WMCO-QAP-8.01
Receives documentation based on examination of containers
Reviews documentation for completeness & accuracy
Signs & approves NV-211 & related documentation Forwards to WCP
Verifies shipment documentation is acceptable for release
Completes Waste Shipment Certification form when all documents are present & accurate & signs Shipping Order
Forwards shipment documentation package to Traffic Manager
Forwards copy of Waste Shipment Certification & Waste Shipment Verification Checklist to Waste Certification Manager

PROCEDURE

2.1 Event Notification and Reporting Requirements

2.1.1 All unplanned or unwanted events or incidents shall be immediately reported to supervision. In the supervisor's absence the Assistant Emergency Duty Officer (AEDO) shall be notified for proper notification and reporting in accordance with topical manual, FMPC-2182, "Emergency and Non-Routine Event Notification and Reporting."

2.1.2 Supervision shall evaluate all unplanned or unwanted events or incidents for determination of reportability as a Minor Event in accordance with site procedure, FMPC-704, Minor Event Reporting System.

2.1.3 Any circumstance of event which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to supervision. The supervisor shall immediately report the circumstance of possible radioactive materials intake to Radiological Safety (RS) for evaluation.

2.2 Industrial Health and Safety Requirements

2.2.1 Leather palm gloves shall be worn when handling sharp-edged or abrasive materials, containers, lids and banding materials.

2.2.2 Safety glasses shall be worn by all personnel at all times posted areas, except when another type of eye protection equipment is specified.

2.2.3 Supervisors shall be responsible for contacting Industrial Hygiene for chemical air contaminants, or RS for radioactive contaminants, to determine appropriate respiratory protection. Determination of requirements shall be made in accordance with topical manual, FMPC-2128, Industrial Hygiene and Safety Manual.

2.2.4 Respirators, as determined required per 2.2.3, shall be available by supervision for each person working with waste material and shall be used in accordance with topical manual, FMPC-2084, Radiation Control Manual.

2.2.5 Any personnel involved with circumstances of an event which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall report to Medical Services to submit a urine sample at the end of their shift, or as directed by their supervision, and again at the start of their next shift.

2.3 General Requirements For Transporting L-LRW and LSA Waste

NOTE: WMCO-QAP-12.09 must be completed prior to implementation of this procedure.

2.3.1 All certification personnel verifying packaging and shipment of L-LRW to the Nevada Test Site (NTS) shall be trained and qualified on this procedure, WMCO-QAP-12.09, NVO-325, and the Waste Certification Program Plan in accordance with Quality Assurance Procedure WMCO-QAP-6.11, Qualification of Waste Package Certifiers, or on Quality Assurance Procedure WMCO-QAP-6.12, Qualification of Waste Certification Officials.

2.3.2 Materials prohibited by NVO-325 and/or listed on the "Prohibited Materials List" (Attachment A) shall not be packaged for shipment.

2.3.3 Only materials approved by NTS, Solid Waste Compliance and Waste Management shall be shipped. The Quality Department Waste Certification Manager is responsible for making this information available to all personnel performing verification and certification work.

2.3.4 Only container designs approved for shipment by the NTS that meet the requirements of NVO-325 and CFR 49 shall be used. For the purpose of this procedure only those container types verified as acceptable by the Waste Certification Manager, or another Certification Official, are to be used.

2.3.5 All packaging shall be in strong, tight containers that do not leak under normal transport and handling conditions, and which meet the criteria of Title 49 CFR 173.421 and 173.425.

2.3.6 White Metal box containers may not exceed 6000 lbs. maximum gross weight, wood box containers may not exceed 5000 lbs., 48 or 55 gallon drums may not exceed 1200 lbs. maximum gross weight, 85 gallon drums may not exceed 1000 lbs. maximum gross weight, 85 gallon overpacks may not exceed 1280 lbs. maximum gross weight, or as specified in WMCO-QAP-12.09.

2.3.7 Marking and labeling shall be in accordance with Title 49 CFR 172, Subparts D & E, as follows:

a. Container Number
b. Shipment Number
c. Gross Weight
d. Radioactive markings
e. Other marking and labeling as required for the packaged material

3511

2.3.8 Packages certified and held for shipment must be secure and protected from weather and other adverse conditions having the potential to create an unacceptable condition. Covered or enclosed storage, which includes covering with plastic or tarpaulin are appropriate protective measures. If appropriate measures have not been taken, all packages concerned shall be reexamined by Waste Certification Personnel and recertified on the basis of the reexamination results.

2.3.9 Beta/Gamma radiation levels shall not exceed 200 millirem/hour measured externally at the surface or 10 millirem/hour measured externally at one (1) meter in accordance with 49 CFR 173.441.

Alpha emitters	220 DPM/100 cm^2
Beta/Gamma emitters	2200 DPM/100 cm^2

2.3.10 No container leakage is permitted under normal transport conditions in accordance with 49 CFR 173.425.

2.4 Examination of Packages in Staging Area

This examination will be performed at the loading area by Waste Certification Personnel who have been properly trained in this procedure and NVO-325 prior to loading any packages into trailers for shipment to NTS. Results shall be documented on "Waste Shipment Final Authorization Checklist" (Attachment B).

2.4.1 Examination of Drums Prior to Loading

Examines sealed drums prior to loading on trailers for shipment to NTS. These drums are to be examined 100% by Waste Certification Personnel.

2.4.1.1 The lid shall be properly seated on the drum and held in place by a bolt ring closure. If bolt and flanges are not lower than rest of ring, then ring is positioned upside down.

2.4.1.2 Checks for red paint on ring bolt to indicate it has been tightened to 45 (± 5) ft-lbs. using torque wrench (Attachment B).

2.4.1.3 Checks for safety wire threaded through hole in with the bolt head or threaded portion of bolt and around threaded portion of bolt ring and fastened (Attachment C). Check that jam nut is locked to opposite side of bolt head or threaded with flat side against ring harness.

2.4.1.4 Examines all surfaces of the drum and lid and reject for any of the following conditions.

a. A breach (a hole, crack, gash, etc.)
b. A dent or bulge which has creased, gouged, or may have otherwise significantly weakened the metal.

c. A dent greater than 1" in depth or extending over 6" in any direction.
d. A significant dent in the bottom rim. A significant dent is one that compromises the integrity of the container.
e. A significant dent in a rolling hoop which may affect the integrity of the container.
f. Rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container (small areas of exposed base metal, minor to moderate scratches, and slightly rusted spots are acceptable).
g. Any deformation or out-of-round condition affecting the integrity of the sealing surface.

2.4.1.5 Checks exterior of container for exposed bare metal requiring touch-up painting.

2.4.1.6 Checks exterior of drums for moisture.

2.4.1.7 Checks that the gross weight does not exceed 1200 lbs. and that it is marked in two inch (minimum) letters on each drum.

2.4.1.8 Checks labels and markings against "Storage & Disposal Data Sheet" (Attachment D), "Tally Sheet" (Attachment E) , and computer printout (Attachment F) "Circle Copy" for the particular shipment for weight and labels accuracy.

2.4.1.9 Notify Waste Operations Supervisor of any nonconformance found and checks that they are corrected prior to loading.

2.4.1.10 Apply "NV-211 Packaging Certification Label" to each package upon satisfactory examination (Attachment G).

2.4.2 <u>Examination of Wood Boxes Prior to Loading</u>

Examines wood boxes at the loading area prior to loading on trailers for shipment to NTS. These boxes are to be examined 100% by Waste Certification Personnel. Results shall be documented on "Waste Shipment Final Authorization Checklist" (Attachment B).

2.4.2.1 Checks for damage to the box and lid. No holes, cracks, or deterioration (i.e. rot) which would permit leakage or lessen the structural integrity of the box are acceptable.

2.4.2.2 No moisture is visible on either the inside or the outside of the box.

2.4.2.3 RTW Silicone Adhesive, or equivalent, has been applied in a continuous bead (1/4 inch minimum) between lid and box.

2.4.2.4 Box is banded vertically with three 1-1/4 inch metal bands, one band on each end of the box and one in the middle of the box.

2.4.2.5 Box lid shall be fastened using ten penny nails on 3 inch centers and two sixteen penny galvanized nails on each side panel into two inch by four inch on top panel (8 places) providing proper closure.

2.4.2.6 Box does not exceed 5000 pounds gross weight and that it is marked in two inch (minimum) letters on each box.

2.4.2.7 Checks labels and markings against "Storage & Disposal Data Sheet" (Attachment D), "Tally Sheet" (Attachment E), and computer printout (Attachment F) "Circle Copy" for the particular shipment for weight and labels accuracy.

2.4.2.8 Notifies Waste Operations Supervisor of any nonconformance found and checks that they are corrected prior to loading.

2.4.2.9 Apply "NV-211 Packaging Certification Label" to each package upon satisfactory examination (Attachment G).

2.4.3 Examination of Metal Boxes Prior to Loading

Examines metal boxes at the loading area prior to loading on trailers for shipment to NTS. These boxes are to be examined 100% by Waste Certification Personnel. Results shall be documented on "Waste Shipment Final Authorization Checklist" (Attachment B).

2.4.3.1 Metal box must be a light color, usually white for Uranium contaminated rubble, gray for Thorium contaminated rubble.

2.4.3.2 Containers must be clean.

2.4.3.3 Each container shall be well constructed of steel with all seams adequately welded.

2.4.3.4 The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.

2.4.3.5 The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.4.3.6 For all box designs having drain plugs, verify that box has been checked for a drain plug, and if found the drain plug has been tightened.

a. A red dot on the lower left hand front of the box shall indicate that the plug has been tightened.
b. A black dot on the lower left hand front of the box shall indicate that there is no drain plug.
c. All metal boxes shall have either a red or black dot marked.

2.4.3.7 Examines container for proper closure as follows :

a. Verifies that Radioactive material markings (2 sides) and FMPC container number markings are present and legible. Shipment number, log number and container identification number shall be clearly marked in one inch (minimum) letters using black waterproof ink.
b. Verify that all unnecessary marking have been removed or covered.
c. Verify that gross weight does not exceed 6,000 pounds and that it is marked in two inch (minimum) letters on each box.
d. Verify that a foam rubber or similar type gasket is on the sealing surface of the lid, or the lid is sealed with a durable sealant.
e. Verifies that lid is properly placed on the box.
f. Verifies locking pins required for the container are in place with the locking notches below the straps and fully engaged to full thickness of strap over entire locked surface edge of notch.
g. If the bolt type utilizes a bolted retainer ring, verify all bolts are securely in place.
h. Verifies the lid is secured with two 1-1/4" steel straps.

2.4.3.8 Checks labels and markings against "Storage & Disposal Data Sheet" (Attachment D), "Tally Sheet" (Attachment E), and computer printout (Attachment F) "Circle Copy" for the particular shipment for weight and labels accuracy.

2.4.3.9 Checks exterior of container for exposed bare metal requiring touch-up painting.

2.4.3.10 Notifies Waste Operations Supervisor of any nonconformance found and checks that they are corrected prior to loading.

2.4.3.11 Applies "NV-211 Packaging Certification Label" to each package upon satisfactory examination (Attachment G).

2.4.4 <u>Examination of Sea/Land Cargo Containers Prior to Loading</u>

Examines sea/land containers at the loading area prior to loading on trailers for shipment to NTS. These containers are to be examined 100% by Waste Certification Personnel. Results shall be documented on "Ready to Ship" Checklist (Attachment H).

2.4.4.1 Each container shall be well constructed of steel with all seams adequately welded.

2.4.4.2 The containers shall be free of holes, severe gouges, and significant deformations causing structural weakness or improper sealing.

2.4.4.3 The containers shall be free of rust causing exfoliation (scale), severe pitting, or other conditions having a detrimental effect on the serviceability of the waste container.

2.4.4.4 Verifies that the exterior of the sea/land is in good condition.

a. Verifies that all unnecessary markings have been removed or covered.
b. Verifies that caulking is around all doors and around all sealing surfaces, and that the metal doors are securely closed, and two metal bands secure the two door latches together.
c. Verifies gross weight of sea/land and that it is marked in two inch (minimum) letters on each sea/land.
d. Verifies that Radioactive material markings (2 sides) and FMPC container number markings are present and legible. Shipment number, log number and container identification number shall be clearly marked in one inch (minimum) letters using black waterproof ink.
e. If Sea/Land container is top loading, verifies that a foam rubber or similar type gasket is on the sealing surface of the lid, or the lid is sealed with a durable sealant.
f. Verifies that the sea/land container has been painted.

2.4.4.5 Checks labels and markings against "Storage & Disposal Data Sheet" (Attachment D), "Tally Sheet" (Attachment E), and computer printout (Attachment F) "Circle Copy" for the particular shipment for weight and labels accuracy.

2.4.4.6 Apply "NV-211 Packaging Certification Label" to each package upon satisfactory examination. (Attachment G)

2.4.5 <u>Examination of Bales Prior to Loading</u>

Examines bales at the loading area prior to loading on trailers for shipment to NTS. Bales are to be examined 100% by Waste Certification Personnel. Results shall be documented on "Waste Shipment Final Authorization Checklist" (Attachment B).

2.4.5.1 Verifies that each bundle of trash is properly constructed:

a. Consists of two bales of trash covered with Flex-Iron Bulk Bags or equivalent.
b. Each bag covered bale is mounted on a wood pallet.
c. Two of these subparts are stacked one on top of each other and a third wood pallet is positioned on top.
d. Two 1-1/4 inch straps of banding are wrapped around to secure the bundle and tightened with banding clips.
e. Cardboard strips are positioned to keep the metal banding strips from cutting into the bales.
f. Checks baled trash package for holes, tears, water leaks, and defects.

2.4.5.2 Verifies the top wood pallet is labeled with the shipment number and bundle number in one inch letters.

2.4.5.3 Verifies that markings are legible and waterproof ink has been used.

2.4.5.4 Verifies that the gross weight is marked on the top wood pallet

2.4.5.5 Checks labels and markings against "Storage & Disposal Data Sheet" (Attachment D), "Tally Sheet" (Attachment E), and computer printout (Attachment F) "Circle Copy" for the particular shipment for weight and labels accuracy.

2.4.5.6 Notifies Waste Operations Supervisor of any nonconformance found and Checks that they are corrected prior to loading.

2.4.5.7 Applies "NV-211 Packaging Certification Label" to each package upon satisfactory examination (Attachment G).

2.5 Examination of Package Markings and Labels

Immediately prior to transport loading, Waste Certification Personnel verify that the required markings and labels are applied to containers and grouped together. Marking and labeling in accordance with Title 49 CFR 172 Subparts D & E, is required as follows:

a. Each acceptable package shall have a "Radioactive LSA" label as required, form FMPC-T-1623 (Attachment I), if the surface dose rate exceeds 0.5 mR/hr. or the U-235 content exceeds 15 grams.
b. Each acceptable package shall have a "RADIOACTIVE-LIMITED QUANTITY" Label, FMPC-REST-1623-1 (Attachment I) if the surface does rate is equal to or less than 0.5 mR/hr. and the U-235 content is less than or equal to 15 grams.
c. Each package which contains 0.1 Curries or greater of Uranium must be labeled "RQ" in conjunction with the requirements of sections 2.5.a. and 2.5.b. (Attachment I).
d. Each acceptable package will have the letters "WML" and the shipment number on the package exterior. This may be either stenciling in one inch block or legible letters using black waterproof ink on bar code label.
e. Each acceptable package shall have a separate package number on the exterior. This may be either stenciling in one inch block or legible letters using black waterproof ink on bar code label.
f. Each acceptable package shall have the gross weight marked on the exterior. This may be either stenciling in two inch block or legible letters on bar code label.
g. Each package certified as acceptable for NTS disposal shall have a required "NV-211 Packaging Certification Label," FMPC-Q&S-234 or FMPC-Q&S-234-1 (Attachment G), affixed after examination of the package and shortly before or during loading. The label shall be displayed on the side of the package in a group pattern with other labels and markings.

2.6 Documentation of Examination and Deviations

Immediately prior to transport loading, Waste Certification Personnel assure that all examinations are properly documented on the applicable checklist, as required; assures that nonconforming conditions are documented and processed as follows:

2.6.1 Any deviations observed should be documented on the appropriate checklist.

2.6.2 Any waste package rejected due to non-acceptable or non-authorized contents or physical damage to the containers shall have a nonconformance tag attached to it as identification (See WMCO-QAP-8.01). Deviations shall be corrected prior to affixing "NV-211 Packaging Certification Label." Uncorrectable deviations or lack of prompt or appropriate action, or chronic and/or systematic errors must be documented on a Deviation and Corrective Action Report (DCAR) in accordance with WMCO-QAP-8.01.

2.6.3 Any waste packages rejected due to improper labeling or identification shall be corrected prior to affixing a "NV-211 Packaging Certification Label." If no acceptable solution can be defined, a nonconformance tag shall be attached and a DCAR shall be issued in accordance with WMCO-QAP-8.01.

2.6.4 Forwards appropriate forms and documentation to Certification Official for review, approval, and certification.

NOTE: Disposal of any rejected containers, lids, bolt rings, or lever rings shall be the responsibility of Waste Operations or the generator of the package.

2.7 Preliminary Certification

Waste Certification Personnel examine the transport trailer prior to loading and completes the appropriate checklist.

2.7.1 Examines the transport trailer/vehicle as follows:

2.7.1.1 Verifies that the RS Technician has surveyed each trailer/vehicle prior to loading and has recorded results on the "Vehicle Radiation Monitoring Report," form FMPC-ES&H-1596-1 (Attachment J), to ensure that radiation and contamination levels do not exceed the requirements listed in 49 CFR 173.441.

2.7.1.2 Determines the condition of the trailer/vehicle by examining the trailer/vehicle floor, interior, roof, roof interior, rear door, rear door gasket, and tires. Any of the following conditions shall be brought to the attention of the Traffic Manager:

a. holes or "soft" areas in floor or roof which would allow possible leakage and/or jeopardize the structural integrity of the trailer/vehicle
b. liquid or oily substances on interior surfaces
c. non-securing or poor sealing rear doors
d. tires
   1. insufficient tread (2/32" min. trailer, 4/32" min. tractor)
   2. separation of tread
   3. punctures
   4. bulges
   5. underinflated (use manufacturer's recommended pressure, cold)
   6. flats

2.7.1.3 Examines the lining of trailer/vehicle for compacted baled trash and verifies that the floor and approximately three (3) feet up the side and rear walls are covered with plastic sheet, and that the floor is covered with single-faced cardboard or approved equivalent.

2.7.1.4 Completes the "Waste Certification Preliminary Trailer Checklist" (Attachment K) or the "Waste Certification Preliminary Trailer Checklist (Sea/Lands)" (Attachment L).

2.8 Examination of Drums

Waste Certification Personnel examine drums at loading and verifies that drums have been properly stacked, loaded and tied down in accordance with SOP-TRF-46-C-110 and that the following requirements have been met:

2.8.1 Drummed materials requiring proper weight distribution have been placed into the vehicle split into two groups:

a. the front unit is encircled with 1-1/4" steel strapping, connected with two clips, double-crimped, and 2 x 4 wood shoring nailed to the floor behind the unit.
b. the rear unit is placed so as the proper weight distribution is maintained and a wood picket brace is constructed at the front of the group. Drums behind the picket brace are encircled with 1-1/4" steel strapping connected with two clips, double-crimped, and providing no metal plate is directly behind the group, 2 x 4 wood shoring is nailed to the floor behind the group.

2.8.2 Double-decked drummed material has been loaded in a similar manner as paragraph 2.8.1, except for the following:

a. the floor is loaded solid,
b. a piece of plywood has been placed on the top of the first deck and the second deck of drums has been loaded from the front to the rear. Both rows of drums have been encircled with 1-1/4" steel strapping, with two clips, double-crimped,
c. two-by-four wood shoring has been nailed to the floor behind the first deck of drums, if no metal plate is directly behind the drums.

2.9 Examination of Metal Boxes

Waste Certification Personnel examine metal boxes at trailer loading and verifies they are not damaged, that metal boxes have been loaded and tied down in accordance with SOP-TRF-46-C-110 and that the following requirements have been met:

2.9.1 Metal Boxes have been placed into the vehicle correctly for proper weight distribution. Normally, these shipments contain either seven (7) to ten (10) containers. With seven (7) containers a split of three (3) in the front unit and four (4) in the rear unit is required. Ten (10) containers are to be loaded straight down the center of the vehicle floor. When the number of containers making up the shipment are not seven (7) or ten (10), they are to be loaded them in the same manner as for seven (7).

2.9.2 Front Unit (2-5 boxes) has been shored using two sets of brakeman plates nailed to the floor of the vehicle (prior to loading) with 1-1/4" steel strapping threaded through each plate. Two of these units are used to encircle each load unit (2 bands) and shall be tightened and fastened with two clips, double-crimped. The bands have plastic protectors on the edges of the first and last container to keep the bands from breaking.

2.9.3 Rear Unit (2-5 boxes) has been shored using 2" X 4" brace in front of the containers. Use same method of steel banding as on the front unit.

2.9.4 The shoring of ten (10) metal boxes has been accomplished using the same steel banding method as used for seven (7). The first five (5) have been banded as one unit, and the last five (5) as one unit.

2.10 Examination of Wooden Boxes

Waste Certification Personnel examine wooden boxes at loading and verifies they are not damaged and that wooden boxes are properly stacked, loaded and tied down in accordance with SOP-TRF-46-C-110 and that the following requirements have been met:

2.10.1 Wooden boxes have been placed into the vehicle for proper weight distribution. Normally, these shipments consist of sufficient numbers to require partial double-decking. When double-decking is required the double stacks shall be banded together prior to loading.

2.10.2 Two sets of brakeman plates have been nailed to the floor (set on top of the plastic and cardboard) in the front and rear section of the vehicle with 1-1/4" steel strapping threaded through each plate.

2.10.3 Boxes have been loaded straight down the center of the vehicle floor.

2.10.4 Two (2) bands have been used to encircle the first six (6) boxes as one unit and the last five (5) as one unit.

2.11 Examination of Compacted Baled Trash

2.11.1 Waste Certification Personnel examine compacted baled trash at loading and verifies that compacted baled trash has been properly stacked, loaded and tied down in accordance with SOP-TRF-46-C-110 and that the following requirements have been met:

2.11.1.1 Compacted bales of trash placed for proper weight distribution have been double stacked and loaded straight down the center of the vehicle floor. Normally, these shipments consist of twenty-two (22) bales (11 packages) of compacted trash.

2.11.1.2 Two sets of brakeman plates have been nailed to the floor (set on top of the plastic and cardboard) in the front and rear section of the vehicles with 1-1/4" steel strapping threaded through each plate. Six side cleats with 1-1/4" steel strapping have been nailed to the floor on both sides of the vehicle for cross banding of the bales.

2.11.1.3 After the first five double stacks of bales have been loaded, the front unit has been encircled with steel strapping and the bands tightened and fastened with two clips, double-crimped.

2.11.1.4 Cross bands have been placed over stack numbers one, three, and five. Single-faced cardboard has been folded for a minimum of 4-ply protection and placed under the bands of the top bales plastic enclosure. The bands have been tightened and fastened with two clips double-crimped.

2.11.1.5 The rear section has been banded in the same manner as the front section except that cross bands have been placed over bale numbers seven, nine and ten.

2.12 Examination of Sea/Land Cargo Containers

Waste Certification Personnel examine Sea/Land container at loading, checks the maximum gross weight on container with actual gross weight, and verifies that container has been loaded and tied down in accordance with SOP-TRF-46-C-110 and that the following requirements have been met:

2.12.1 Sea/Land containers have been placed onto a flat bed truck for proper axle-weight distribution. For a shipment consisting of one container, the doors of the container shall be facing the rear of the truck. For a shipment consisting of two containers the doors of the front unit shall be facing to the rear and the rear unit shall be facing the front of the truck.

2.12.2 If the container or shipment exceeds 42,000 gross pounds, a waiver must be approved by the Manager, Transportation Regulatory Compliance and Certification Official as to whether or not it may be shipped. A copy of the appropriate letter will be attached to the "Ready to Ship" Checklist when it is prepared during the check of incoming paperwork.

2.12.3 Containers have been secured to the flatbed truck with four (4) nylon straps over each unit secured to the frame of the trailer, chains have been placed and secured in front of and behind the bottom of each container fastened to the trailer bed, and a 2 x 4 has been nailed to the trailer floor at the rear of each unit.

2.13 General Examination Activities After Loading

Waste Certification Personnel shall conduct the following activities after the trailer has been loaded:

NOTE: Two (2) photographs of the packages shall be taken prior to closing the doors of the trailer. Photos are also required of flat bed loads. Include information on shots to be taken.

2.13.1 Verifies that the trailer is locked or a numbered tamper-indicating seal is applied to the rear door locking mechanism whenever the trailer is unattended overnight or for any other extended period. If a seal or lock is not used prior to resumption of loading or closure of the van, an examination shall be made to verify that the packages previously loaded were not disturbed and no unauthorized packages or materials were placed in the shipment.

2.13.2 Completes the examination of the loaded trailers for NTS shipments and completes the "Waste Shipment Final Authorization Checklist" (Attachment B).

2.13.3 Reports, by copy of the appropriate checklist, any deficiencies to the Transportation Supervisor for correction. Checklists which include deficiencies are recorded and tracked on a deficiency log. Documents any repetitive or uncorrected deficiencies on a DCAR form in accordance with WMCO-QAP-8.01.

2.13.4 Forwards all completed documentation to the the individual who will be making the final inspection at Traffic prior to release of the trailer.

2.14 Final Trailer/Vehicle Examination

Waste Certification Personnel conduct a final examination of the vehicle/trailer after closure as follows:

2.14.1 Verifies that the shipment, associated paperwork and transport vehicle is acceptable for release.

2.14.2 Verifies that RS Technician has surveyed the trailer/vehicle and recorded the results on the "Vehicle Radiation Monitoring Report," form FMPC-ES&H-1596-1 (Attachment J), and that these results are within specification.

2.14.3 Compares the "Storage & Disposal Data Sheet" (Attachment D) with the "Bill of Lading" (Attachment M) to verify that the following information is correct:

a. Number and type of containers
b. Total curie content
c. Shipment gross and net weight
d. Shipment number

2.14.4 Verifies that an envelope containing copies of the "Tally Sheet," "Storage & Disposal Data Sheet" (refer to WMCO-QAP-12.09), and LSA/RQ, LQ (Limited Quantity) documentation of the shipment is fastened to the rear container when possible or stapled to the trailer wall inside of the trailer doors for NTS use upon opening the trailer at the destination. If the shipment is not in a closed van, verifies that the "Tally Sheet" and "Storage & Disposal Data Sheet" are in the envelope which is to be delivered by the driver.

2.14.5 Verifies the presence of "Radioactive" placard on both sides, front and rear of vehicle/trailer.

NOTE: A shipment containing limited quantity packages exclusively does not require these placards.

2.14.6 Verifies that the following are operational on the vehicle/trailer. Completes the "Waste Certification Final Trailer/Vehicle Checklist" (Attachment N).

a. Headlights
b. Turn signals
c. Brake lights
d. Horn
e. Tire condition, per section 2.7.1.2 of this procedure

2.14.7 Compares the "Bill of Lading" (Attachment M) and the "Shipping Order for Nuclear Material," form FMPC-CONT-558 (Attachment O), to verify the following:

a. Trailer Number
b. Shipment Number
c. Gross Wt. and Net Wt.
d. Bill of Lading Number
e. Shipping Order Number
f. Seal Number
g. Lot Number
h. Container Number (for Sea/Land containers)

2.14.8 Verifies that a seal has been placed on the trailer and that the trailer number and the seal number match the seal number recorded on the "Bill of Lading" (Attachment M), and reviews the "LLW Shipment Checklist" (Attachment Q), and the "Off-Site Loading Tie-Down Inspection-Vehicle Inspection" Form (Attachment S).

2.14.9 Completes the "Waste Certification Final Trailer/Vehicle Checklist" (Attachment N), and "Waste Certification Traffic Shipment Documentation Checklist" (Attachment P).

2.14.10 Verifies that the gross weight on all documentation is within 100 lbs. of actual.

2.14.11 When instructed, completes the "Waste Shipment Verification Checklist" (Attachment T), for the Certification Official by verifying the following information:

a. Radiation Monitoring Sheets
b. Off-Site Tie Down Inspection/Vehicle Inspection Form
c. Weight Ticket
d. Shipping Order
e. Bill of Lading
f. Disposal/Storage Sheet

g. Tally Sheet
h. Radiological Survey Report
i. LLW Shipment Checklist
j. Sea/Land Container "Ready to Ship" (If applicable)
k. Waste Certification Preliminary Trailer Checklist
l. Waste Certification Traffic Shipment Documentation Checklist
m. Waste Certification Final Trailer/Vehicle Checklist
n. Item Production/Certification/Identification Card

2.14.12 Reports all deficiencies on the appropriate checklist. Repetitive or uncorrected deficiencies are documented on the DCAR form in accordance with WMCO-QAP-8.01.

NOTE: Uncorrected deviations must be resolved before Quality Department can provide a release of the shipment.

2.14.13 Notifies the Certification Official that shipment paperwork is complete and available for final review.

2.14.14 Forwards completed documentation to Waste Certification Manager who reviews and maintains documents in accordance with WMCO-QAP-9.01.

3.0 REFERENCES

NVO-325, Nevada Test Site Defense Waste Acceptance Criteria, Certification and Transfer Requirements
3.2 FMPC-503, FMPC Spill Incident Reporting and Cleanup
3.3 FMPC-704, Minor Event Reporting System
3.4 WMCO-QAP-1.05, Abbreviations, Acronyms, and Definitions
3.5 WMCO-QAP-6.11, Qualification of Waste Package Certifiers
3.6 WMCO-QAP-6.12, Qualification of Waste Certification Officials
3.7 WMCO-QAP-8.01, Deviation and Corrective Action Reporting
3.8 WMCO-QAP-9.01, Designation, Preparation, Storage and Maintenance of Quality Documents
3.9 WMCO-QAP-12.09, Certification of Waste Package Examination and Sealing for Off-Site Shipment
3.10 SOP-TRF-46-C-110, Preparation and Shipment of Radioactive Material (Low-Level Waste)
3.11 SOP 20-C-601, Packaging Low Level Radioactive Waste (L-LRW) for Offsite Disposal
3.12 SOP 1-C-602, Low Level Radioactive Waste (L-LRW) Shipment Preparations

.0 ATTACHMENTS

4.1 Attachment A, Prohibited Materials List
2 Attachment B, Waste Shipment Final Authorization Checklist
.3 Attachment C, Bolt Diagram
4.4 Attachment D, Storage & Disposal Data Sheet
4.5 Attachment E, Tally Sheet
4 Attachment F, Computer Printout - "Circle Copy"
4.. Attachment G, NV-211 Packaging Certification Labels

4.8 Attachment H, "Ready to Ship" Checklist (for Sea/Lands)
4.9 Attachment I, Radioactive-LSA, Radioactive-Limited Quantity, & "RQ" Labels
4.10 Attachment J, Vehicle Radiation Monitoring Report
4.11 Attachment K, Waste Certification Preliminary Trailer Checklist
4.12 Attachment L, Waste Certification Preliminary Trailer Checklist (Sea/Lands)
4.13 Attachment M, Bill of Lading
4.14 Attachment N, Waste Certification Final Trailer/Vehicle Checklist
4.15 Attachment O, Shipping Order for Nuclear Material
4.16 Attachment P, Waste Certification Traffic Shipment Documentation Checklist
4.17 Attachment Q, LLW Shipment Checklist
4.18 Attachment R, DELETED
4.19 Attachment S, Off-Site Loading Tie-Down Inspection-Vehicle Inspection Form
4.20 Attachment T, Waste Shipment Verification Checklist

3511

PROHIBITED MATERIALS LIST

Nonradioactive Material

Pressurized Vessels

Explosives

Radioactive Gases

High-Level Waste

Pyrophoric Materials

Toxic or Poisonous Materials

Liquid Materials

Flammable Substances

Alkaline Metals

Reactive Materials (could cause fire)

Liquid Organic Waste or Waste that contains any Free Liquid

Ashes, Dry Powders or Respirable Fines (unless immobilized or a double containment package is used)

If the Waste is Ionized or Immobilized the pH must be greater than 4

Attachment B
Page 1 of 2

WASTE SHIPMENT FINAL AUTHORIZATION CHECKLIST

WASTE SHIPMENT FINAL AUTHORIZATION CHECKLIST

SHIPMENT NUMBER: WMI-_____

WASTE DESCRIPTION: _____

Waste Package Description:

Package Type _____

Number of Packages _____ Verified by (Initials) _____

VERIFICATION CRITERIA PER QAP 12.09

Verify the following:

1. Information on packages matches REDCO Radioactive Waste Management - Storage & Disposal Sheet (Circle Copy) and no inappropriate information present on packages. _____
2. No unauthorized materials loaded. _____
3. No free liquids on or emitting from packages. _____
4. No significant package defects such as dents, rust, holes, cracks, or tears (baled trash). _____
5. Proper closure of container lid. _____
6. Packages are free of adhering or entrapped soil, debris, etc. _____

Verify the following where applicable:

Drums: Presence of safety wire on bolts. _____

Locking nut tightened (red paint on bolt). _____

Lid and ring are seated properly. _____

Wood boxes: Lid nailed and secure, adequate caulking, and three 1 1/4" metal bands present (one on each end and one in middle) and secure. _____

Holes drilled in false bottom, runners secure and no severely bowed sides or liquid seepage. _____

Metal boxes: Required number of wedge type locking pins are fully engaged catching lower edge of locking strap and are at least even with locking strap. _____

Two 1 1/4" metal bands are banded tightly with two banding clips on each band equidistant from center around package. _____

Presence of a red dot (drain plug exists) or a black dot (no drain plug). _____

3511

WASTE SHIPMENT FINAL AUTHORIZATION CHECKLIST
(continued)

Distance of gasket around lid when possible. _____

Open holes in runners. _____

Baled trash: Two 1 1/4" metal bands and two banding clips on each band strapped evenly and tightly completely around the outside of the closed sides of the top and bottom pallets. _____

Corrugated cardboard present on top of bale and under banding in area of band/pallet contact. _____

Shipment information located on the top pallet of each bundle. _____

Verify shipment number, FMPC, and package number are stenciled in 1-inch block letters located on top center and on the side of all packages except for baled trash (sides only). _____

LOADING INFORMATION

Verify presence of the following labels:
DOT Radiation Labels, Radioactive LSA and IQ/RQ as applicable. _____

Package containing asbestos require asbestos label, CRM-C. RQ should be stenciled next to CRM-C only when quantity of asbestos meets EPA and 49 CFR reportable quantity limits. _____

NV-211 label dated and signed by an authorized package certifier. _____

Verify the loading of the shipment concurs with the criteria established in SOP TFR-46-C-110, Section 6.1. _____

Shipment Number Loaded: _____ Time: _____ Date: _____

Trailer Number: _____ Seal Number: _____

I hereby certify that the above checklist has been completed and witness that the above items are correct to the best of my knowledge.

Signed: _____ Date: _____
QA Waste Packaging

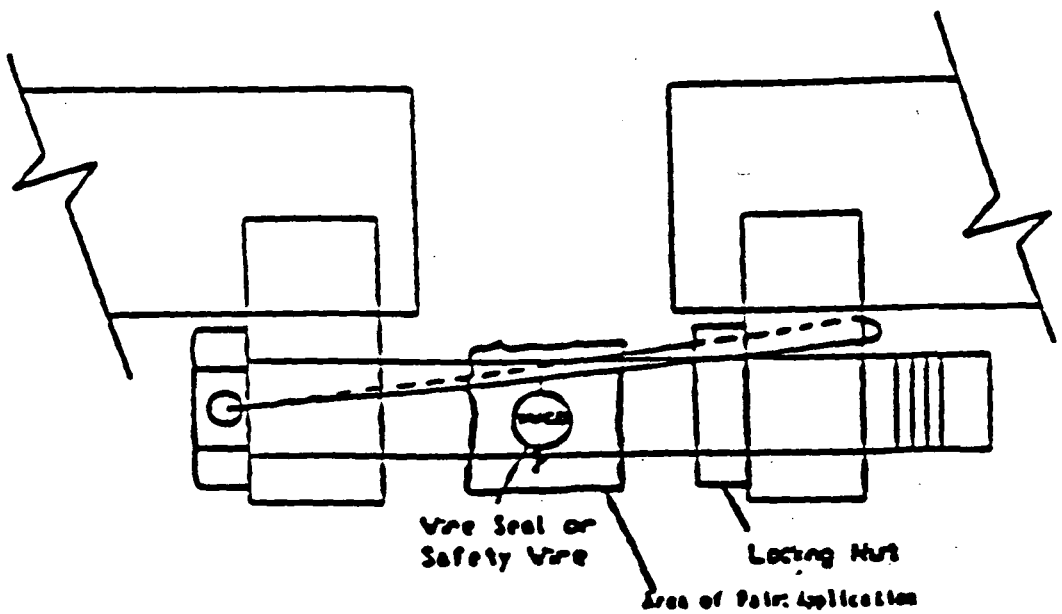
Comments: _____

_____

Signed: _____ Date: _____
Waste Operations Supervisor

Copies to : Waste Certification Files
Waste Operations (original)

BOLT DIAGRAM



Attachment D
Page 1 of 1

STORAGE & DISPOSAL DATA SHEET

MAL-90 091

02/27/90
14:50:10

Bechtel Electrical and Engineering Co., Inc.
Radioactive Waste Management-Storage & Disposal

DESCRIPTION: Construction Rubble
Reinforcement Rubble

Prepared By: [illegible]
Date: 2/27/90 Area Code Phone: FTS 776-8647

Approved: Decontamination Personnel: [illegible]
Date: 2-27-90 Area Code Phone: FTS 776-8647

SECTION 1

CARD	SHIPMENT NUMBER	D	C	B	S	D	FT	YR	G	GUESTIMATE CATEGORY	CURIE QUANTITY	C	GROSS VOLUME	F	GROSS WT(lbs)	P	OVERPACKS 0
	2 9	10	11	12	13	14	15	16	17	25 26 34		35	36 44	45	46 54	55	BOXES 10
2	MAL90091	D	B	L	D	B	9	0	2	2	2.7951E-04		1.0220E+03		2.4618E+04		DRUMS 0
											0.0002794		1020.00		24603.0		

SECTION 2

CARD	GUESTIMATE DESCRIPTION	QUANTITY	C	S	COMMENTS
	2	15 16 24	25	26	27
3	U-238	2.7879E-04	C	1	810 GRAMS
3	U-235	8.7546E-06	C	2	4 GRAMS

SECTION 3

CARD	WASTE CODE	VOLUME CU.FT.	% CONS.	WEIGHT LBS.	S	COMMENTS
	23	4 12	13 14	16 17 25	26 27	28
3	4 00	8.1400E+02	F 0	1.8046E+04	P 1	835
3	4 00	2.0400E+02	F 0	6.3750E+03	P 2	841

SECTION 5

CARD	COST NUMBER	ASSAY DATE	CLASS CODE	CONT/AT CODE	GROSS WEIGHT LBS	GROSS VOLUME CU.FT.	PRIMARY RADIATION AT SURF mrem/hr	PRIMARY RADIATION AT 3 FT mrem/hr	PRIMARY ELEMENT & ISOTOPIC	PRIMARY CURIE QUANTITY	SECONDARY ELEMENT & ISOTOPIC	SECONDARY CURIE QUANTITY	PRIMARY ISOTOPE WEIGHT GRAMS	SECONDARY ISOTOPE WEIGHT GRAMS
6/7	1	05/09/89	21Z2	8352122	1674.0	102.00	0.30	0.30	U-238	1.5039E-05	U-235	4.8630E-07	45	0.2
6/7	2	05/09/89	21Z2	8352122	1675.0	102.00	0.30	0.30	U-238	1.5039E-05	U-235	4.8630E-07	45	0.2
6/7	3	05/09/89	21Z2	8352122	1674.0	102.00	0.30	0.30	U-238	1.5039E-05	U-235	4.8630E-07	45	0.2
6/7	4	05/09/89	21Z2	8412122	2930.0	102.00	0.30	0.30	U-238	3.0079E-05	U-235	9.7270E-07	90	0.5
6/7	5	05/09/89	21Z2	8352122	4293.0	102.00	0.30	0.30	U-238	6.0158E-05	U-235	1.9454E-06	180	0.9
6/7	6	05/09/89	21Z2	8352122	1537.0	102.00	0.30	0.30	U-238	1.5039E-05	U-235	4.8630E-07	45	0.2
6/7	7	05/09/89	21Z2	8352122	2923.0	102.00	0.30	0.30	U-238	3.0079E-05	U-235	9.7270E-07	90	0.5
6/7	8	05/09/89	21Z2	8412122	3640.0	102.00	0.30	0.30	U-238	4.5118E-05	U-235	1.4590E-06	135	0.7
6/7	9	05/09/89	21Z2	8352122	1300.0	102.00	0.30	0.30	U-238	1.5039E-05	U-235	4.8630E-07	45	0.2
6/7	10	05/09/89	21Z2	8352122	2759.0	102.00	0.30	0.30	U-238	3.0079E-05	U-235	9.7270E-07	90	0.5

TALLY SHEET

WOL-90 091 02/27/90
14:58:01

TO: Bechtel Electric and Engineering Co., Inc.
U.S. DOE, Nevada Test Site, Zone 2
Mercury, NV 89023
Attention: S. Zerwell

NEVADA TEST SITE SHIPMENT
TALLY SHEET
LOT NUMBER [illegible]
LOT NUMBER [illegible]

FROM: Westinghouse Materials Company of Ohio
P. O. Box 398704
Cincinnati, OH 45239

LOT NUMBER	CONT. NO.	GROSS WT. (POUNDS)	TARE WT. (POUNDS)	NET WT. (POUNDS)	U ASSAY	PERCENT U-235	PERCENT U-238	U POUNDS	ELEMENT WT(gms)	U-235 ISOTOPE WT(gms)	U-238 ISOTOPE WT(gms)	U-235 Ci	U-238 Ci	VOLUME CU FT
A334	1	1675.0	630.0	1044.0	0.010	0.500	99.48	0.1	45	0.2	45	4.[illegible]E-07	1.[illegible]E-05	102.00
A334	2	1875.0	630.0	1245.0	0.010	0.500	99.48	0.1	45	0.2	45	4.[illegible]E-07	1.[illegible]E-05	102.00
A334	3	1674.0	630.0	1044.0	0.010	0.500	99.48	0.1	45	0.2	45	4.[illegible]E-07	1.[illegible]E-05	102.00
9023	4	2930.0	630.0	2300.0	0.010	0.500	99.48	0.2	91	0.5	90	9.72702-07	3.00770-05	102.00
A334	5	4293.0	630.0	3663.0	0.010	0.500	99.48	0.4	181	0.9	180	1.94540-06	6.01500-05	102.00
A334	6	1537.0	630.0	907.0	0.010	0.500	99.48	0.1	45	0.2	45	4.[illegible]E-07	1.[illegible]E-05	102.00
A334	7	2923.0	630.0	2293.0	0.010	0.500	99.48	0.2	91	0.5	90	9.72702-07	3.00770-05	102.00
9023	8	3640.0	630.0	3010.0	0.010	0.500	99.48	0.3	136	0.7	135	1.[illegible]E-06	4.[illegible]E-05	102.00
A334	9	1300.0	630.0	670.0	0.010	0.500	99.48	0.1	45	0.2	45	4.[illegible]E-07	1.[illegible]E-05	102.00
A334	10	2759.0	630.0	2129.0	0.010	0.500	99.48	0.2	91	0.5	90	9.72702-07	3.00770-05	102.00
TOTALS		24605.0	6300.0	18305.0				1.8	815	4.1	810	8.7[illegible]E-06	2.70770-04	1020.00
--- LOT TOTALS ---														
9023	2	6570.0	1260.0	5310.0				0.5	227	1.1	226	2.[illegible]E-06	7.[illegible]E-05	204.00
A334	8	18255.0	5040.0	12995.0				1.3	588	2.9	587	6.[illegible]E-06	1.[illegible]E-04	816.00

3511

Attachment F
Page 1 of 1

COMPUTER PRINTOUT - "CIRCLE COPY"

WML-90 091

Reynolds Electrical and Engineering Co., Inc.
Radioactive Waste Management-Storage & Disposal

PACKAGE NO.	NET WT	TARE WT	GROSS WT	LSA	LQ	RQ
1	1044.00	630.00	1674.00	X		
2	1245.00	630.00	1875.00	X		
3	1044.00	630.00	1674.00	X		
4	2300.00	630.00	2930.00	X		
5	3663.00	630.00	4293.00	X		
6	907.00	630.00	1537.00	X		
7	2293.00	630.00	2923.00	X		
8	3010.00	630.00	3640.00	X		
9	670.00	630.00	1300.00	X		
10	2129.00	630.00	2759.00	X		

NV-211 PACKAGING CERTIFICATION LABELS

NV-211 **PACKAGING CERTIFICATION**

This certifies that this container and its contents are in acceptable condition for transportation and waste disposal according to DOT (49 CFR), EPA (40 CFR), and DOE/NV (NVO-325) requirements.

DATE: _____

CERTIFIED BY: _____

TITLE: CERTIFICATION OFFICIAL

ORGANIZATION: FMPC

FMPC-OLS-234 (REV. 9/7/88)

NV-211 **PACKAGING CERTIFICATION**

This certifies that this container and its contents are in acceptable condition for transportation and waste disposal according to DOT (49 CFR), EPA (40 CFR), and DOE/NV (NVO-325) requirements.

DATE: _____

CERTIFIED BY: _____

TITLE: PACKAGE CERTIFIER

ORGANIZATION: FMPC

FMPC-OLS-234-1 (REV. 9/7/88)

3511

Attachment H
Page 1 of 1

"READY TO SHIP" CHECKLIST (FOR SEA/LANDS)

WASTE CERTIFICATION CHECKLIST
SEA LAND CONTAINER
"READY TO SHIP"

INFORMATION (Waste Operations)

DATE: _____ SHIPMENT NUMBER: _____

MTL. TYPE: _____ BOX ___ S/N: _____

MTL. TYPE: _____ ___ _____

		BOX 1	BOX 2
LOCATION : _____	WEIGHTS: Gross	_____	_____
_____	Tare	_____	_____
_____	Net	_____	_____

EXAMINATION CRITERIA (Waste Certification) — Initials

Trailer No.: _____

0. Verify "Item Production/Certification/Identification" XX card is completed accurately. Form Number FMPC-ES&H-1945-XX. _____
1. Radioactive material markings present. (2 sides) _____
2. Container Number-FMPC marking present. _____
3. All unnecessary markings have been removed or covered. _____
4. Marking is complete as follows:
   Proper shipping label(s) identified (LSA, RQ, LQ) _____
   Gross weight identified _____
5. Marked weight values match above values. _____
6. The box door has been sealed by caulking and a metal band is attached to both door latches. _____
7. Seal number _____ affixed to container. _____

PLACE NV-211 ON DOOR OF CONTAINER WHEN ABOVE CRITERIA IS SATISFACTORILY MET.

CERTIFICATION (Waste Certification)

I hereby certify the above items have been examined and the above items are correct to the best of my knowledge.

Signed: _____
(Waste Certification)

Date: _____

902

3211

CHANGE NOTICE		
No. QAP-12.12-02-01	Effective Date: 09/13/90	Page 1 of 1
AUTHORIZED: (Vice President, Quality)		

Attachment I
Page 1 of 1

"Radioactive-LSA" Label is replaced by "Radioactive-LSA UN-2912" Label (FMPC-SA&ML-1623-3, 12/29/87).

RADIOACTIVE-LSA, RADIOACTIVE-LIMITED QUANTITY, & "RQ" LABELS

Radioactive-LSA
UN-2912

RADIOACTIVE-LIMITED QUANTITY

UN-2910

FROM: FMPC

This package conforms to the conditions and limitations specified in 49 CFR 173.421 for excepted radioactive material, limited quantity, n.o.s., UN-2910.

RQ

3511

Attachment J
Page 1 of 1

VEHICLE RADIATION MONITORING REPORT

FWPC
[illegible]
VEHICLE RADIATION MONITORING REPORT

Date Monitored: _____ Monitored by: _____

Carrier Name: _____

Vehicle Type: Tractor-trailer ☐ Other motor vehicle ☐ Railcar ☐ Open flatbed ☐ Covered ☐

Other ☐ (explain) _____

License no., if motor vehicle: _____ State: _____

Trailer or railcar identification: _____

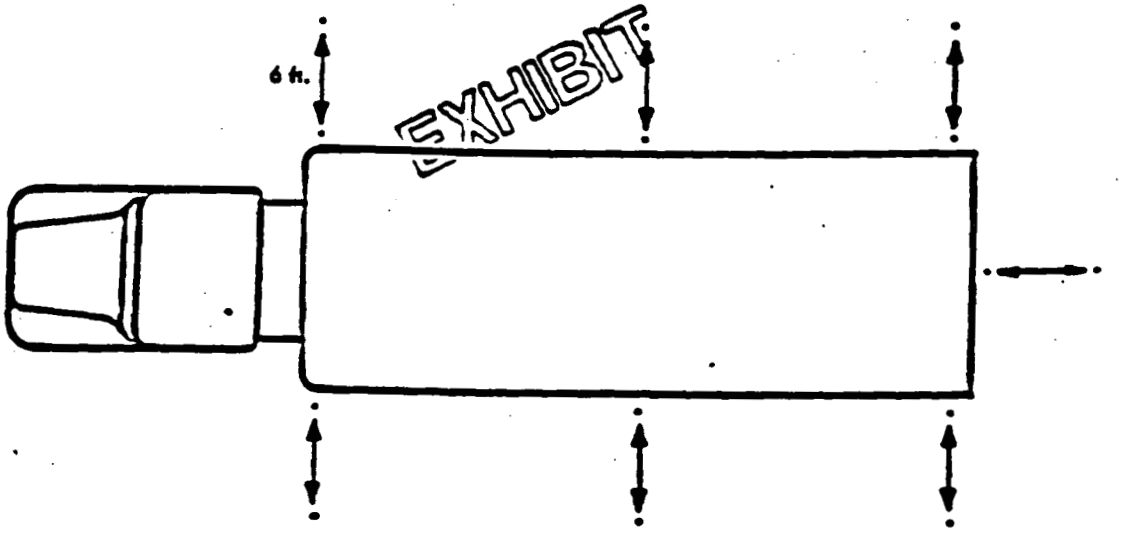
Is this an exclusive use vehicle? Yes ☐ No ☐

Vehicle Status: (a) Outgoing ☐ (b) Incoming ☐ (c) Outgoing empty, not "exclusive use" ☐ (d) Empty, before loading ☐

(e) Outgoing empty, "exclusive use" ☐ (f) If (e) is checked, is vehicle to remain "exclusive use"? Yes ☐ No ☐

Is visible contamination present? Yes ☐ No ☐ If "yes", show on diagram.

Dose rate shown by asterisks in mrem/hr. Surface alpha contamination, circled, in d/m/100cm².



(1) Same locations apply to van-type trucks. For railcars, disregard cab section but show dose rates found at each end.
(2) Measurements at 6-ft. not required if all readings at vehicle surface are not greater than 10 mrem/hr

Survey Instruments Used

Alpha — Type or Model No _____ Serial No. _____

Beta-gamma — Type or Model No _____ Serial No. _____

Additional information attached? (E&RM copy only): Yes ☐ No ☐

NO.	DISTRIBUTION OF COPIES
1	[illegible]
2	[illegible]

[illegible]

Attachment K
Page 1 of 1

WASTE CERTIFICATION PRELIMINARY CHECKLIST

WASTE CERTIFICATION PRELIMINARY TRAILER CHECKLIST

TRAILER NUMBER: _____

1. Verify the RST has surveyed trailer prior to loading and recorded results on form ES&H-1596-1 to assure the trailer is not contaminated. _____

2. Verify the condition of trailer floor, interior, roof, sides, exterior, rear doors and tires are acceptable. Any discrepancies must be reported immediately to the Transportation Supervisor. _____

Comments: _____

_____

3. Verify the trailer has been lined properly according to SOP-TRF-46-C-110 prior to loading. _____

4. Visually verify that the packages have been properly tied-down according to SOP-TRF-46-C-110. _____

   Shipment Number: _____

5. Visually verify that the loaded trailer rear doors are secured with a tamper indicating seal. _____

   Seal Number: _____

I hereby certify that the above checklist item have been verified and that all the above items are correct to the best of my knowledge.

Signed : _____
(Certification Personnel)

Date : _____

Signed : _____
(Transportation Supervisor)

Date : _____

QAC-880801-1, Rev.1 (12/06/89)

3511

Attachment L
Page 1 of 1

WASTE CERTIFICATION PRELIMINARY CHECKLIST (SEA/LANDS)

WASTE CERTIFICATION PRELIMINARY TRAILER CHECKLIST (SEALANDS)

Rev. 10/10/89

Trailer Number:_____ Shipment Number:_____

1. Verify the ERMT has surveyed trailer prior to loading and recorded results on form ES&H-1596-1 to assure the trailer is not contaminated . _____

2. Verify the trailer floor, exterior and tires are acceptable for loading . Any discrepancies must be reported immediately to the transportation supervisor . Any nonconfomances or outstanding DCAR must be resolved before shipment can be released . _____

Comments: _____

_____

3. Visually verify that the sealand containers have been properly tied down with, four straps on each container, chain and 2X4 on front and back of load . _____

4. Visually verify the sealand containers rear doors are secured with a tamber proof DOT approved seal . _____

Container #1:_____Seal number:_____Box #:_____
Container #2:_____Seal number:_____Box #:_____

I hereby certify that the above checklist has been completed and witness that all above information is correct to the best of my knowledge .

Signed :_____
(Certification Personnel)

Date :_____

Signed :_____
(Transportation Supervisor)

Date :_____

Attachment M
Page 1 of 1

BILL OF LADING

STRAIGHT BILL OF LADING — SHORT FORM — ORIGINAL — NOT NEGOTIABLE

CARRIER	DATE	CARRIER'S I.C.	SHIPPER'S NO.

FERNALD, OHIO

FROM USDOE, c/o Westinghouse Materials Company of Ohio
ACTING UNDER DOE CONTRACT DE-AC05-86OR21600

Consigned to:

Destination: State of: County of:

Route:

Delivering Carrier: Vehicle No.: Trs. #

Car Initial: Car No.: Seal No.: FA/WMCO

NUMBER PACKAGES	HM	DESCRIPTION OF ARTICLES, SPECIAL MARKS, AND EXCEPTIONS	* WEIGHT (Subject to Correction)	CLASS OR RATE	CHECK COLUMN
		IN THE EVENT OF AN ACCIDENT OR EMERGENCY, NOTIFY THE DOE EMERGENCY OPERATIONS CENTER, OAK RIDGE, TN — 615-576-1005, COLLECT, DAY OR NIGHT.			

WMCO

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "To be Prepaid."

Charges Advanced:

$

* If the contents of this shipment are specifically described by name and packaged so as to indicate the type of shipment, the weight may be omitted.

NOTE - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

* THIS SHIPMENT IS CORRECTLY DESCRIBED.
CORRECT WEIGHT IS _____ LBS
SUBJECT TO VERIFICATION BY THE B. W. & I. BUREAU NATIONAL WT. AGREEMENT

* Shipper's signature in lieu of stamp not a part of bill of lading unless signature is specifically authorized by carrier.

741 NO.:

SS - SO NO.:

MSO NO.:

EQUAL EMPLOYMENT OPPORTUNITY — The nondiscrimination clauses contained in section 202 of Executive Order 11246 relative to equal employment opportunity for all persons without regard to race, creed, color, or national origin, and the implementing rules and regulations of the President's Committee on Equal Employment Opportunity which, to the extent not inconsistent with Executive Order 11246, remain in full force and effect as rules of the Secretary of Labor, are incorporated herein.

THIS SHIPMENT is subject to the terms and conditions set forth in the standard form of the U. S. Government bill of lading and to any applicable general rules of carriers.

* This shipment is the property of and the freight charges are assumed by the U. S. Government. Subject to the provisions of Section 15(2) Commerce Act. (Tender No. _____ Effective _____).

* IT IS UNDERSTOOD AND AGREED THAT THIS SHIPMENT IS MADE BY THE CONSIGNOR FOR AND ON BEHALF OF THE U. S. GOVERNMENT; THAT THE CONSIGNOR IS AUTHORIZED TO AND WILL MAKE ANY PAYMENT DUE HEREUNDER AS CONSIGNOR OR SHIPPER FROM GOVERNMENT FUNDS ADVANCED AND AGREED TO BE ADVANCED TO IT BY THE U. S. DEPARTMENT OF ENERGY AND NOT FROM ITS OWN ASSETS; AND THAT NOTHING HEREIN SHALL PRECLUDE LIABILITY OF THE GOVERNMENT FOR ANY PAYMENT PROPERLY DUE HEREUNDER OR FOR ANY ERROR SUCH PAYMENT IS NOT MADE BY THE CONSIGNOR FROM SUCH GOVERNMENT FUNDS.

* THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION.

USDOE, c/o Westinghouse Materials Company of Ohio, shipper

Per _____

Permanent post office address of shipper.

Agent

Per _____

P. O. BOX 398704 CINCINNATI, OHIO 45239
AREA CODE 513 738-6200

PMPD-AD08-002 REV. 07/90

3511

Attachment N
Page 1 of 1

WASTE CERTIFICATION FINAL TRAILER/VEHICLE CHECKLIST

WASTE CERTIFICATION FINAL TRAILER/VEHICLE CHECKLIST

(Rev.12/06/89)

Carrier:_____ Trailer No. :_____ Shipment No. :_____

	Initials
1. Verify the RST has surveyed the trailer/vehicle and recorded results on Vehicle Radiation Monitoring Report (Form FMPC-ES&H-1596-1).	_____
2. Verify the proper placards are in place, as required.	_____
3. Verify the driver has performed a safety inspection of vehicle prior to leaving the FMPC:	_____

headlights _____ horn _____
turn signals _____ tires _____
brake lights _____ braking check test (optional) _____

4. Verify the envelope with Manifest and Tally Sheets is in trailer.	_____
5. Verify that a seal has been placed on the trailer doors and that the trailer number and seal number match the trailer and seal number recorded on the Bill of Lading. Report all discrepancies to the Traffic Manager.	_____

Seal Number: _____

6. Verify all lot markings and weights on the Tally Sheet match the lot markings and weights on the Shipping Order.	_____

Date Shipped: _____ Time Shipped: _____

I hereby certify that the above items have been verified and are correct to the best of my knowledge.

Signed:_____ Date:_____
(Waste Certification Personnel)

NOTE: UPON SATISFACTORY COMPLIANCE WITH THE ABOVE CHECKLIST CERTIFICATION PERSONNEL SHOULD SIGN THE SHIPPING ORDER AT THE SPACE MARKED "QUALITY CONTROL APPROVAL".

QAC-881115-1, Rev. 2

Attachment 0
Page 1 of 1

SHIPPING ORDER FOR NUCLEAR MATERIAL

NOTE: Spaces marked "A" are for use of [illegible] when required.

Westinghouse Materials Company of Ohio

SHIPPING ORDER FOR NUCLEAR MATERIAL

A

Date Prepared: _____

Ship To: | Shipper: | Shipper Representative No.: | Shipper Order No.:

Street: | Phone: | Car or Trailer No.: | Seal No.: | Shipped From Plant: | Destination No.:

City: | State: | Carrier: | Bill of Lading No.: | Quality Control Approval: | Date Shipped:

Special Instructions: | Country Control No.: | Product No.: | Time Shipped:

Type of Material: _____ FMPC Production Order No: _____ Originator's Signature: _____

Status RAS: _____ DOE 741 No: _____ Shipment Authorized By: _____

WMC DATA			ORIGINATOR'S DATA						MATERIAL CONTROL DATA								
FROM COST	TO COST	741 NO	P.O. NO	LOT NUMBER	QUANTITY	WEIGHT (LBS) GROSS	TARE	NET	WMA CODE	S.L.E. ANIM.	S.L.E. LBS	S.L.E. GRAMS OR KGS	U-235 ENRICH %	U-235 ANIM.	U-235 GRAMS OR KGS	U-235 ENRICH %

DISTRIBUTION OF COPIES	
WMA RECORD COPY	5 Cost Accounting
Shipping Group	6 Originator or Shipping Order
Quality Control	
Production Control	

WMC-CON1-[illegible]

I, _____ certify that this shipment was made on the above date after complying with all security requirements.

A

Authorized by _____ Date _____

A

3511

Attachment P
Page 1 of 1

WASTE CERTIFICATION TRAFFIC SHIPMENT DOCUMENTATION CHECKLIST

Waste Certification Traffic Shipment Document Checklist

	Bill/Lading(B/L)	Shipping Order(S.O.)
Ship #		
B/L#		
S.O.#		
Trailer#		
Data Prep		
Mat.Type		
Gross Wt.		
Tare Wt.		
Net Wt.		
E.T.A.		
Seal #		
MCA sign		
# of cont.		
LSA/LQ/RQ		

	Low Level Checklist	Packaging Information	
Ship #		Hazard Class	
B/L #		Material Form	
S.O.#		Chemical Form	
All Checks		Labels Required	
3 sign		Packaging Type	

Radiation Monitoring Sheets

	Empty	Outbound	Survey	Cab
Trailer#				
Date/Time				
Survey com.				

*Complete liscense # _____
*Temporary Seal # _____

Container Radiological Sheets

	Date	Time	Data Complete	Ship #
Initials				
Remarks				

	Off Site Tie Down	Contaminated Articles Sheet
Ship #		Curies
Trailer #		Signature
Seal #		Data Complete
Sup.Sign		

*3 Tally Sheets & 1 Storage/Disposal Sheet present _____
*Driver Inst. Pack complete and numbered _____
*Weight Ticket *Ft. Axle _____ * Rear Axle _____ * GR. Wt. _____
(Maxium weight on front or rear axle 34,000 lbs.)

QAC-880711-1, Rev.1 (10/10/89)

Attachment Q
Page 1 of 1

LLW SHIPMENT CHECKLIST

FMPC
SECURITY, ACQUISITION & MATERIALS LOGISTICS - TRANSPORTATION SECTION
LLW SHIPMENT CHECKLIST & NTS NOTIFICATION

DATE:	SHIPMENT NO.:	B/L NO.:	SS SO NO.:	CARRIER:	TRAILER NO.:

LSA	DEPARTURE TIME:	ETA:	NOTIFICATION TO N ☐ (FTS: 575-63
RQ	FROM:		
LTD. QTY.	TO:		
DRUMS	DATE:		
WASTE CERTIFICATION CONTAINER TOTALS. WEIGHTS & CURIES OF LSA/LTD QTY - RQ SHEETS	BY WHOM:		
BOXES	TO WHOM		
SMEAR SHEETS	☐ FACSIMILE SENT	☐ DRIVER GIVEN DOSIMETER BAC	
WASTE MANAGEMENT STORAGE & DISPOSAL SHEETS DELIVERED — PER NTS	MONITORING REPORTS:		
TALLY SHEETS			
CARRIER/DRIVER INSTRUCTION PACK (2)			
NEVADA PERMIT			
INCOMING/EMPTY BEFORE LOADING			
OUTGOING/LOADED			
TRACTOR CAB			
OFFSITE LOADING-TIE DOWN-VEHICLE INSPECTION REPORT			
WEIGHT TICKET			
CHECKED TALLY SHEET (BY CHECKER)			

DRIVER RECEIVES:
COPY OF B/L, TALLY SHEET, INSTRUCTION PACK, NEVADA PERMIT, & ENVELOPE FOR CONSIGNEE WITH TALLY SHEET & MEMO B/L

SPECIALIST A/TRAFFIC	TRANSPORTATION SUPERVISOR: (REVIEW)	TRAFFIC MANAGER: (REVIEW)

CONDITION OF CONTAINERS	LOADERS:
CONTAINER PROPERLY LABELED	
RADIOACTIVE PLACARDS (FOR LSA ONLY)	
ENVELOPE WITH STORAGE & DISPOSAL SHEETS AND TALLY SHEETS IN TRAILER	
TRAILER LINED WITH PLASTIC & CARDBOARD ON FLOOR— SCRAP WOODEN PALLETS AND/OR BOXES ENCLOSED WITH PLASTIC AS ONE PACKAGE	
Transportation Supervisor _____	

FMPC-5414L-2081 (10/89)

DELETED

Attachment S
Page 1 of 1

OFF-SITE LOADING TIE-DOWN INSPECTION - VEHICLE INSPECTION FORM

MPC
ECURITY, ACQUISITION & MATERIALS LOGISTICS DEPARTMENT - TRANSPORTATION SECTION

OFFSITE LOADING — TIE DOWN INSPECTION — VEHICLE INSPECTION

Date: _____

COMMODITY:	CARRIER:	TRAILER NO.:	SEAL NO.:
			FA-WMCO

CRATE/BOX/DRUM/SEA LAND CONTAINER NUMBERS:

	DISCREPANCIES DETECTED	CORRECTED YES	CORRECTED NO	SHIPMENT REJECTED YES	SHIPMENT REJECTED NO
LSA					
LSA-RO					
LO					
LO-RO					
TOTAL					

Checked By _____
SIGNATURE - CHECKER

TIE-DOWN INSPECTION AND CHECK-OFF SHEET

INSPECTION ITEM	YES	NO
Wood shoring installed to prevent longitudinal or lateral movement		
Steel strapping around the cargo securing as a stable shipment		
When weight dictates, containers divided into two units, one front and one rear of trailer not exceeding approximately 20,000 pounds each		
¾" steel strapping utilized (5450 lbs. minimum tensile strength)		
each anchor plates or "U" bolts fastened to underframe (each side of unit) placed and secured for transverse bands over unit		
Four each brakeman plates or "U" bolts fastened to underframe (two for each band) placed under each unit and secured for two longitudinal bands securing the boxes/skids into one front unit anchored to the floor of the trailer		
Two Signode seals No. 107 crimped whenever two bands are used on an end over end lap joint		
Anchor and brakeman plates secured with eight each 2" nails		
Sea Land Containers ..... 4 each nylon straps		
..... Chains		
..... 2 X 4s		

VEHICLE INSPECTION REPORT

CONDITION	PASS	FAIL	CONDITION	PASS	FAIL	CONDITION	YES	NO
Condition of Floor			Condition of Sides			Detected Sabotage Devices		
Condition of Interior			Condition of Exterior					
Condition of Roof			Condition of Rear Doors			Detected Evidence of Sabotage		

Overall appearance: _____

General Comments: _____

Accepted: _____ Rejected: _____

Checked By: _____
SIGNATURE - TRANSPORTATION SUPERVISOR

NO.	DISTRIBUTION OF COPIES
1	Transportation Section (RECORD COPY)

MPC-SAML-A88 (REV. 6/88)

3511

Attachment T
Page 1 of 2

WASTE SHIPMENT VERIFICATION CHECKLIST

WASTE SHIPMENT VERIFICATION

Page 1 of 2

Date _____ Time _____

Shipment No. WML- _____ Trailer No. _____ No./Type Container _____

1. Storage & Disposal Data Sheet

   A. Material Description _____
   B. Signed _____ Shipment No. WML- _____
   C. Total Curries _____
   D. Total Weight (Gross) _____
   E. Total Volume _____
   F. Type Container _____
   G. Date _____ Time _____
   H. Check of "G" for all copies _____

2. Tally Sheet

   Shipment No. WML- _____ Date _____ Time _____
   Check of Date & Time of all copies in Pkg. _____

A. Lot Number	Gross Weight	Net Weight
Totals		

   B. Total containers _____ Totals agree with "1" above _____
   C. Field check of Tally Sheet included _____

3. Shipping Order for Nuclear Material (FMPC-ES&H-558-3 REV. 1/29/87)

   A. Shipping Order No. _____ B/L No. _____
   B. 741 No. FVC-VAB _____ Seal No. FA-WMCO _____
   C. Trailer No. _____ MC & A Signed _____
   D. Material Type _____
   E. Lot Nos. agrees with Tally Sheet _____ Total Quantity _____
   F. Gross Weight _____* Element Analysis _____*
   G. Tare Weight _____* Element Lbs. _____*
   H. Net Weight _____* Element Grams or Kgs _____*
   I. Iso Analysis _____* U235 Grams or Kgs _____*
   J. Est. Time of Arrival _____
   K. *Totals (listed) & Individual Lot values (not listed) agree with Tally Sheet. _____

4. Bill of Lading

   B/L No. _____ Trailer No. _____ Seal No. FA/WMCO _____
   741 No. FVC-VAB- _____ SS-SO No. _____
   ETA : _____
   Number of containers:

		Type Container	Gross Wt.	Net Wt.
LSA _____	RQ _____			
	NON-RQ _____			
LQ _____	RQ _____			
	NON-RQ _____			
Totals	_____			

   _____ Above information agrees with Shipping Order & Tally Sheet.
   _____ Remainder of information of Bill of Lading checked.

WASTE SHIPMENT VERIFICATION CHECKLIST
(continued)

WASTE SHIPMENT VERIFICATION

5. Low Level Waste Shipment Checklist and NTS Notification Form

   A. Shipment No. WML-_____ B/L No. _____
   SS-60 No. _____
   B. Data on line 5A agrees with B/L and Shipping Order _____
   Completed except for Departure Time and Traffic Manager review _____

6. Radiation Monitoring Sheet (FMPC ES&H-1596-1) For:
   A. Trailer Empty _____ Trailer ID _____
   B. Trailer Loaded _____ Trailer ID _____
   C. Cab Only _____ Trailer ID _____ License No. _____
   D. Loaded Vehicle Radiological Survey _____ Trailer ID _____
   E. Temporary Seal Numbers _____

7. Container Radiological Data
   Initial Dose Rate Data _____ 48 Hour Smears: Date_____ Time_____
   Equal to or less than 48 hours prior to Load Time _____

8. Weight Ticket
   Load Weight _____ Rear Axle Wt._____ Drive Wt._____

9. Off-Site Tie-Down Inspection Form (FMPC SAML 2495 REV 4/5/89)
   Shipment No. WML-_____ Trailer No._____ Seal No. FA/WMCO_____
   A. Checked and signed in two places _____

10. LSA/RQ, IQ documentation
    One copy in Traffic File package _____
    One copy in envelope for Driver _____
    A. Signed if non-computer report _____
    B. Wt. checks with Tally Sheet _____
    C. Curies checks with Disposal Sheet or Tally Sheet _____

11. Driver Instructions Complete (2 sets) _____
    Tally sheet also in envelope _____
    All Written identity & information checks _____

12. Waste Certification Checklist present, signed and in agreement with other documentation.
    A._____ Waste Certification Preliminary Trailer Checklist

    B._____ Waste Certification Traffic Shipment Documentation Checklist

    C._____ Waste Certification Final Trailer/Vehicle Checklist

Shipping Order signed by Certification Official _____

Shipment released on _____ at _____AM/PM

Signed _____

List Nonconformances found:

_____

_____

Westinghouse Materials Company of Ohio — FMPC	NUMBER: FMPC - 707	REVISION: 1	ISSUE DATE: 10/27/89 3311
SITE POLICY AND PROCEDURE	TITLE: AUDIT PROGRAM		
	APPROVED BY: M. B. Boswell, President		

1.0 POLICY

Westinghouse Materials Company of Ohio (WMCO) shall maintain an auditing program to verify that activities are being conducted in accordance with applicable requirements, to confirm that intended results are being achieved, and that corrective action is taken where required.

2.0 SCOPE

This procedure describes the responsibilities and requirements for planning, performing and documenting formal audits of WMCO activities and of WMCO's suppliers of equipment and services. Included are the audits and appraisals required by Department of Energy (DOE) Orders and directives.

3.0 DEFINITIONS

3.1 Audit- A planned and documented activity performed by investigation, examination or evaluation of objective evidence to determine the adequacy of, and compliance to, established procedures, instructions, drawings and other applicable documents and the effectiveness of their implementation.

3.2 Appraisal- A documented review of a specialty discipline performed in accordance with written guidance and criteria to verify that applicable elements of the performing organization's program have been developed, documented, and effectively implemented in accordance with specific departmental requirements and needs.

3.3 External Audit- An audit of the quality assurance program activities of suppliers of materials and services to the Feed Materials Production Center (FMPC). Included within this definition are the onsite construction contractor of the FMPC, the contractor(s) performing remediation and/or restoration services, and the contractor(s) performing architect/engineer services.

3.4 Internal Audit

(1) An audit of a WMCO organization's activities by representatives of another WMCO organization to determine the status and assess the adequacy and effectiveness of implementation of FMPC procedures and requirements.

(2) An audit conducted by the WMCO Internal Audit organization in accordance with their annual audit plan and the procedures referenced in Section 7.0.

916

3.0 DEFINITIONS (Continued)

3.5 Audit by Outside Organization- An audit of FMPC activities, which is planned and conducted by an organization other than the FMPC, such as DOE or Westinghouse Corporate, or by an independent public accountant. Included within this definition are Technical Safety Appraisals (TSA) and Quality Assurance Functional Appraisals.

4.0 RESPONSIBILITIES

4.1 Manager, Performance Assessment- Plans, directs and performs a comprehensive audit activity; uses audit results to provide feedback to WMCO management concerning the adequacy and effectiveness of FMPC programs and the internal controls used in managing WMCO resources. The Manager, Performance Assessment, shall have oversight of the internal appraisals conducted by other FMPC organizations to assure adequate coverage of WMCO functions with a minimum of duplication.

4.2 Staff Managers- Assure that the operations of their organizations are conducted pursuant to their departmental procedures in order to assess compliance with appropriate DOE Orders and other governmental regulations applicable to their department. Review and concur with audit plans and schedules when requested by the auditing organization: provide staff members to participate on audit teams when requested by the auditing organization; and insure timely approval and implementation of deviation dispositions, corrective action plans, and schedules.

4.3 Audit/Appraisal Team Leaders- Plan, direct and conduct assigned audits/appraisals to assess implementation and effectiveness of work control systems. Report the results of the audit/appraisal and identify work practices which need corrective action.

4.4 Internal Audit Section (Performance Assessment)- Perform audits of financial and operational activities which require independent assessment or verification.

5.0 GENERAL

5.1 Quality Assurance Audits - A comprehensive set of internal and external audits of the FMPC Quality Assurance Program will be planned, scheduled and conducted by Performance Assessment with support and participation from other WMCO departments. The planned audits will cover activities performed internally by WMCO organizations and activities performed externally by subcontractors and suppliers. Appropriate department procedures will be developed to implement the established responsibilities. Other organizations will make personnel available to Performance Assessment as required to assist in the conduct of audits. Audit Team members shall have access to all records, personnel, and physical facilities relevant to the performance of audits.

917

FMPC-2657-1 (REV 5/12/87)

5.0 GENERAL (Continued)

5.2 Department Appraisals - Other site organizations perform internal reviews of their activities as required by DOE Orders, governmental organizations, or customer imposed requirements. These reviews may be referred to as appraisals. The internal appraisal program of these organizations will provide their management an overview of their respective programs to avoid duplication, to refine interrelationships, and to strengthen overall program performance.

5.3 Internal Audits - The Internal Audit Section of the Performance Assessment Department performs internal audits as required by the DOE/WMCO contract, DOE orders, DOE Office of Inspector General, DOE Oak Ridge Operations, WMCO Management, and corporate directives. The primary objective of the Internal Audit Section's audit plan is to provide management with evaluations and recommendations to strengthen internal controls, safeguard corporate assets against loss, and improve financial visibility and operating efficiencies.

6.0 PROCEDURE

6.1 Audit Planning

RESPONSIBILITY	ACTION
MANAGER, PERFORMANCE ASSESSMENT	A. Plan and schedule a comprehensive set of audits on a near-term (quarterly) and long-range (annual) basis.
MANAGER, INTERNAL AUDIT	B. Prepare an annual audit plan which covers the full scope of audit activities as outlined in the DOE/Inspector General Manual, and is coordinated with and approved by WMCO Management and the DOE/ORO Contractor Evaluation Branch.
STAFF MANAGERS	C. Where required by DOE Orders, plan and schedule a program of internal appraisals of Department operations to assess compliance with applicable DOE Orders and federal and state laws and regulations.

918

6.2 Audit Conduct

RESPONSIBILITY	ACTION
MANAGER, PERFORMANCE ASSESSMENT STAFF MANAGERS	A. Organize audit/appraisal teams by providing team leaders and other appropriate team members and by securing technical specialists and other team members as appropriate from other departments.
TEAM LEADER	B. Prepare individual audit/appraisal plan and provide team orientation and direction.
	C. Coordinate internal audits/appraisals with the manager of the audited/appraised organization to ensure that appropriate personnel are contacted.
	D. Coordinate external audits with the appropriate WMCO contract administration personnel.
	E. Lead the team in conducting the planned audit/appraisal in accordance with the applicable departmental procedures.
	F. Prepare the audit/appraisal report recording the results of the audit/appraisal.
MANAGER, PERFORMANCE ASSESSMENT	G. Issue the report of Quality Assurance Program Audits to responsible management and request any needed corrective actions. The audit report shall be issued within 30 days after performance of the audit. Each finding of deviation shall be recorded on a Deviation and Corrective Action Report (DCAR) Form which becomes a part of the audit report. (See Site Procedure FMPC-706, "Deviation and Corrective Action Reporting.")

919

3511

6.2 Audit Conduct (Continued)

RESPONSIBILITY	ACTION
MANAGER, INTERNAL AUDIT	H. Issue the final audit report to the DOE, Oak Ridge Operations, Contractor Evaluation Branch, with a copy to the audited organization. This report includes schedules for implementing corrective action obtained from the audited organization (see step 6.3C). Audit reports are reviewed and approved by the WMCO Executive Vice President before issuance. Internal review of the audit, editing of the draft audit report, and preparation of the final audit report are accomplished in as timely a manner as possible but generally not to exceed 30 days.
APPRAISAL TEAM LEADER	I. Issue the appraisal report to the manager of the appraised organization within 30 days after performance of the appraisal. Request corrective action response for each finding of deviation.

6.3 Audit Follow-Up and Closeout

MANAGER OF AUDITED ORGANIZATION (Quality Assurance Audits)	A. Plan and implement actions to correct deviations or resolve operational problems.
	B. Provide a response to the Manager, Performance Assessment for each finding of deviation by completing the Corrective Action part of the DCAR. (See FMPC-706).
MANAGER OF AUDITED ORGANIZATION (Internal Audits)	C. Provide a response to the Manager, Internal Audits for each finding of deviation including the corrective action planned to resolve the deficiency.

920

6.3 Audit Follow-Up and Closeout (Continued)

RESPONSIBILITY	ACTION
MANAGER OF APPRAISED ORGANIZATION (Internal Appraisals)	D. Provide a response to the Staff Manager within the required time frame as stated in the appraisal transmittal letter, specifying the corrective action planned for resolution of each finding of deviation and a response to each observation.
MANAGER, PERFORMANCE ASSESSMENT STAFF MANAGER	E. Evaluate the disposition of deviations or resolution of operational problems identified through audits and appraisals.
	F. Track findings of deviation on an individual basis until they are completed.
	G. Evaluate the accomplishment of corrective actions and issue a letter closing the audit/appraisal findings upon satisfactory evidence of completion.
	H. Issue bimonthly a status report to identify open items of deviation.

6.4 Program Status, Adequacy and Effectiveness Feedback

MANAGER, PERFORMANCE ASSESSMENT	A. Annually report to the WMCO President the status, adequacy and effectiveness of FMPC operations as revealed from audits/ appraisals.

7.0 APPLICABLE DOCUMENTS

ANSI/ASME NQA-1 - "Quality Assurance Requirements for Nuclear Facilities", Basic Requirement 18 - "Audits"
DOE 2321.1 - "Auditing of Programs and Operations"
DOE 5480.1B - "Environmental Protection, Safety and Health Protection Program for DOE Operations"
DOE 5482.1B - "Environmental Protection, Safety, and Health Protection Appraisal Program"
DOE 5633.3 - "Control and Accountability of Nuclear Materials "
DOE 5700.6B - "Quality Assurance"
FMPC - 706 - "Deviation and Corrective Action Reporting"
DOE-OIG Integrated Contractor Audit Manual (ICAM)
Westinghouse Audit Standards Manual

921

8.0 FORMS USED

FMPC-QA-2909 - Deviation and Corrective Action Report (See FMPC-706) 3511

9.0 ATTACHMENTS

None

922

STEP 9.

1.0 PURPOSE

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.

2.0 APPLICABILITY

This procedure is applicable to the methods and equipment for preparing and taking samples of dry, moist, and liquid materials by Waste Management.

3.0 RESPONSIBILITIES

3.1 Supervisors shall be responsible for the following:

3.1.1 Contacting Industrial Hygiene or Radiological Safety to determine the appropriate respiratory protection for the process being performed.

3.1.2 Providing operators with the required respiratory protection.

3.1.3 Ensuring that only trained personnel take samples.

3.1.4 Reporting exceptional circumstances not addressed by this SOP in a Minor Event Report (refer to FMPC-704) and notifying the AEDO of the circumstances.

3.2 Operators shall be responsible for complying with this procedure and reporting any unusual occurrences to the supervisor or, in the supervisor's absence, the Assistant Emergency Duty Officer (AEDO).

3.3 Radiological Safety shall be responsible for furnishing a copy of P-35-013 with a "Radiation Work Permit" when sampling Plutonium Out of Specification (POOS) material.

3.4 Waste Technology shall be responsible for the preparation of RCRA or suspect RCRA sampling plans, hazardous waste determination, and homogeneous determinations on an individual basis in accordance with required EPA sampling test methods.

3.5 Solid Waste Compliance shall be responsible for hazardous waste determination.

4.0 DEFINITIONS

4.1 DELETED

4.0 DEFINITIONS (cont.)

4.2 DELETED

4.3 DELETED

4.4 DELETED

5.0 REFERENCES

5.1 1-C-701, "Plant 1 Dust Collectors"

5.2 1-C-904, "Operator Scale Checking in Plant 1"

5.3 20-C-601, "Packaging Low Level Waste for Offsite Disposal"

5.4 20-C-605, "Hazardous Waste Satellite Accumulation Areas"

5.5 20-C-905, "Ventilation Flow Indicators (VFI)"

5.6 FMPC-2178, "FMPC Lot Marking and Color-Coding System"

5.7 DELETED.

5.8 SOP 20-C-101, "Moving and Storing Nuclear Materials on Site at the FMPC"

5.9 SOP 20-C-102, "Nuclear Safety for Receiving, Storing, Repackaging, and Moving Enriched Uranium Materials <20% ^{235}U from Offsite"

5.10 SOP 20-C-904, "General Nuclear Safety Requirements"

R 5.11 SOP 20-C-606, "Hazardous Material Spill Clean-Up"

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS

6.1 A defined safety system is not involved.

6.2 Operators shall wear respiratory protection provided by the supervisor when dusty conditions exist.

6.3 Leather-palm gloves shall be worn when handling drums, locking rings, lids, sharp or abrasive materials, or when using tools.

6.4 Face shields and neoprene gloves and aprons shall be worn when taking samples of caustic material, acid slurries, or liquids.

R - MATERIAL REVISED, ADDED, OR DELETED.

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS (cont.)

6.5 Drums with noticeable bulging shall be opened under the direction of the supervisor and Safety and Fire Protection Engineering.

6.6 Protective equipment as directed by IS&H shall be worn when handling or sampling drums that are corroded, rusted, bulging, or deformed.

6.7 Material in damaged drums shall be placed in another correctly identified container.

R 6.8 Any release of hazardous waste shall be reported and handled immediately per
R SOP 20-C-606.

6.9 Dust Collector G2-172 shall be turned on during the sampling operation at the Plant 1 sample line.

6.10 If POOS material is to be sampled, contact Radiological Safety.

6.11 Material shall be handled per the requirements of SOP 20-C-101, 20-C-102, and 20-C-904.

6.12 Any circumstance which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake to Radiological Safety for evaluation. The involved employees shall report to Medical Services at the end of their shift or as directed to submit a urine sample and again report at the start of their next shift to submit another urine sample. The supervisor shall consider the circumstances to be a minor event and shall immediately complete a minor Event Report per FMPC-704 and notify the AEDO of the circumstance.

6.13 Gloves shall be leak-checked prior to use.

6.14 A Radiation Work Permit shall be obtained prior to performing any sampling operation.

R - MATERIAL REVISED, ADDED, OR DELETED.

7.0 PROCEDURE

NOTE: A sampling plan, as required by EPA Document EPA SW-846, shall be prepared prior to sampling a hazardous waste or suspect hazardous waste stream.

NOTE: Any sample collected for hazardous waste or residue material taken for verification of hazardous waste determination shall follow strict chain of custody guidelines in accordance with 7.12.

NOTE: Any deviation from procedure shall be documented on a "Sampling Deviation/Special Handling Requirements", Form FMPC-PRO-3130 (See Figure 1).

NOTE: DELETED.

NOTE: When sampling a material for hazardous waste determination, a "clean" sampler must be used (Refer to Section 7.9).

7.1 Preparation for Sampling

7.1.1 At the start of the operating shift, check the scales to be used per SOP 1-C-904.

7.1.2 Move skids of material into the sampling area.

7.1.3 Prepare a composite sample drum.

7.1.3.1 Tare weigh an empty, clean, color-coded 30-gallon drum. Stencil the tare weight and the lot marking number on the drum (Refer to "FMPC Lot Marking and Color-Coding System").

NOTE: The composite sample container shall be large enough to hold the entire composite sample. Use a larger container if necessary.

7.1.4 If the drum to be sampled was received from offsite, printweigh the drum per Item 7.2.

7.1.5 Remove the locking ring and drum lid from the drum to be sampled.

NOTE: To prevent contamination of the sample, only one drum at a time shall be open.

7.1.6 Visually inspect the waste material to be sampled to determine the physical characteristics (liquid, solid, dry, moist).

- MATERIAL REVISED, ADDED, OR DELETED.

7.0 PROCEDURE (cont.)

7.1.7 Select and obtain a clean sampler for the type of material to be sampled per recommendation of Table 1.

7.1.7.1 If assistance is required in determining the physical characteristics of the waste or the type of sampler to be used, contact Waste Technology.

NOTE: Clean samplers shall have a completed "Clean Equipment" tag affixed to the sampler and be sealed in plastic bags or tubes.

7.1.8 Sample the material using the procedure for the type sampler (Refer to Table 1).

NOTE: The supervisor will supply sampling requirements for nuclear materials and for suspected RCRA material based on published sampling plans. Sampling may also be specified using an approved "Sampling Deviation/Special Handling Requirements", Form FMPC-PRO-3130 (See Figure 1).

7.1.9 Replace the drum lid and lock ring following sampling.

7.1.9.1 If the drum lid and lock ring are damaged, replace with a new lid and ring.

7.1.10 Repeat Steps 7.1.4, 7.1.5, 7.1.8, and 7.1.9 for each drum in the lot.

7.1.11 After the lot has been sampled, weigh the 30-gallon composite sample drum. Record the weight on a "Sample Weight Ticket", Form FMPC-PRO-1579 (See Figure 3).

7.1.12 Take a secondary sample from the composite sample drum (Refer to Item 7.7 and 7.8).

7.1.13 Place a clean lid and locking ring on the 30-gallon composite sample drum.

7.1.14 Using a forklift, load the sampled drums and the composite sample drum onto skids.

7.1.15 Move the skids to the storage area designated by the supervisor.

7.1.16 Clean and store the sampling instrument per Items 7.9 and 7.10.

7.1.17 Complete the "Sample Weight Ticket", Form FMPC-PRO-1579 (See Figure 3).

7.0 PROCEDURE (cont.)

7.1.18 Send the documentation as completed in Item 7.11 and the secondary sample to the laboratory.

7.1.18.1 If the Chain of Custody form is being used, deliver listed samples directly to the Laboratory.

NOTE: The operator obtaining the samples shall deliver the samples to the Laboratory without the use of Transportation personnel.

7.2 Completing the Container Printweigh Card

7.2.1 If the drum to be sampled contains material from offsite, printweigh the drum on a "Container Printweigh Card", Form FMPC-PRO-1342 (See Figure 2).

7.2.2 Check that the gross weight is printed in the "WEIGHT" column.

7.2.3 Enter the drum tare weight in the column marked "CODE".

NOTE: Tare weight is stencilled on the drum.

7.2.4 After lot sampling has been completed, printweigh the composite sample drum.

7.2.5 Calculate the net weight of the composite sample drum.

NOTE: The net weight is the difference between the weight after sampling and the tare weight.

7.2.6 For each composite sample container, complete a "Container Printweigh Card" as follows:

7.2.6.1 Enter the gross and net weight of the composite sample container.

7.2.6.2 In Box #1, enter the type of material sampled.

7.2.6.3 In Box #2, enter the 15-digit lot number.

7.2.6.4 In Box #3, enter the specific sampling method.

7.2.6.5 In Box #4, enter the tare weight.

7.2.6.6 In Box #5, enter the vendor lot marking number, if available.

7.0 PROCEDURE (cont.)

7.2.6.7 In Box #6, enter the date and gross and net weights.

7.2.6.8 In Box #7, enter the date the sample was prepared.

7.2.6.9 In Box #10, enter the scale number.

7.2.6.10 In Box #13, enter the total number of containers (including the composite sample container).

7.2.6.11 In Box #15, enter when the sample was weighed.

7.2.6.12 In Box #16, enter the operator's name and badge number.

7.2.7 Affix the "Container Printweigh Card" to the composite sample drum.

7.2.8 DELETED.

.2.9 DELETED.

7.2.10 DELETED.

7.3 Using the Automatic Closed Auger Sampler

7.3.1 After skids of material have been moved into the sampling area, place the drums on the Sampling Conveyor using a forklift.

7.3.2 Ensure Dust Collector G2-172 is in operation, and if not, start-up and operate per SOP 1-C-701.

NOTE: DELETED.

7.3.3 Check the Ventilation Flow Indicator (VFI) located on the auger enclosure. Notify supervisor and discontinue sampling if the VFI reads less than 2.2 inches differential (Refer to 20-C-905, "Ventilation Flow Indicators").

7.3.4 After the drum lid is removed, manually move the drum along the conveyor into the Auger Sampling Chamber.

7.3.5 Place the composite sample drum under the Sample Discharge Chute.

7.0 PROCEDURE (cont.)

7.3.6 Insert the auger sampler in the drum. Run the auger to the bottom of the drum.

NOTE: Vary the sampling location for each drum. Samples shall be taken from the center and off center points.

NOTE: Do not tilt the drum during sampling.

7.3.6.1 If the material type is different from that previously sampled (different lot, different material), take two samples from the first drum. Discard the samples to avoid cross contamination of samples.

NOTE: Use a separate container to collect the discarded samples. Discard samples can be returned to the drum after the drum has been sampled.

7.3.7 Withdraw the auger sampler.

NOTE: The auger sampler will automatically deposit the sample in the 30-gallon composite sample drum. Drum shall not be more than half filled to permit blending.

7.3.8 Check to ensure that the entire content of the auger was deposited in the sample container.

7.3.9 If specified by supervision, repeat Steps 7.3.9 thru 7.3.11 to take additional samples from other points in the drum.

7.3.10 When sampling is complete, move the drum along the conveyor to the lidding station.

7.3.11 Repeats steps 7.3.4 through 7.3.10 until all drums have been sampled.

7.4 Using the Grain Sampler

7.4.1 Ensure that the grain sampler is in the closed position with the slots in the outer tube face up.

7.4.2 Insert the sampler into the material being sampled.

NOTE: Insert the sampler at a point near the side of the container, through the center of the container, to a point opposite the entry point.

7.0 PROCEDURE (cont.)

7.4.3 Rotate the inner tube of the sampler to the open position.

7.4.4 Wiggle the sampler a few times to ensure that material enters the open slots.

7.4.5 Rotate the inner tube of the sampler to the closed position.

7.4.6 Withdraw the sampler from the drum of material.

7.4.7 Place the sampler in a horizontal position with the slots in the outer tube facing up.

7.4.8 Rotate the inner tube to the open position.

7.4.9 Slide the inner tube out of the outer tube.

7.4.10 Place the sample in the appropriate sample container as specified in Table 2 for residues and Table 3 for RCRA or suspect RCRA material.

7.4.11 Lid the sample container while obtaining the next sample.

7.4.12 If specified by supervision, repeat Steps 7.4.1 thru 7.4.11 to take additional samples from other points in the drum.

7.4.13 After adequate samples have been taken, sample the next drum.

7.4.14 Repeat steps 7.4.1 thru 7.4.13 until all drums in the lot have been sampled.

7.5 Using the Pipe Sampler

NOTE: The pipe sampler shall be long enough to reach the bottom of the container being sampled.

7.5.1 Insert the pipe sampler diagonally through the contents of the drum.

7.5.2 Rotate the pipe sampler once or twice to cut a core of material.

7.5.3 Ensure that the slot is face up and slowly withdraw the pipe sampler.

7.5.4 Check to ensure that the entire length of pipe contains material. If not, repeat Steps 7.5.1 thru 7.5.3.

7.0 PROCEDURE (cont.)

7.5.5 Using a clean stainless steel spatula, push the material out of the sampler into the appropriate sample container as specified in Table 2 for residues and Table 3 for RCRA or suspect RCRA material.

7.5.5.1 If an organic analysis is required, refer to Table 4 for the appropriate sample container.

7.5.6 Lid the sample container while obtaining the next sample.

7.5.7 If specified by supervision, repeat Steps 7.5.1 thru 7.5.6 to collect samples from other points in the drum.

7.5.8 Repeat Steps 7.5.1 thru 7.5.7 until all the drums in the lot have been sampled.

7.6 Using the Composite Liquid Waste Sampler (COLIWASA)

7.6.1 Using the Disposable COLIWASA

7.6.1.1 Adjust the locking mechanism, if necessary, to ensure that the neoprene rubber stopper provides a tight closure.

7.6.1.2 Place the stopper rod handle in the T-position.

7.6.1.3 Push the rod down until the handle is against the locking block.

7.6.1.4 Slowly lower the COLIWASA vertically into the drum.

NOTE: Lower the COLIWASA so that the levels of liquid inside and outside the sampler tube remain even. If the liquid level in the sampler tube is lower than the level outside the sampler, the rate is too fast and will result in a nonrepresentative sample.

7.6.1.5 When the stopper hits the bottom of the drum, push the sampler tube downward against the stopper to close the sampler.

7.6.1.6 Turn the T-handle upright with one end tight on the locking block to lock the sampler closed.

7.6.1.7 Slowly withdraw the sampler with one hand while wiping the outside of the sampler with a clean disposable cloth.

7.6.1.7.1 Dispose of absorbent cloths and trash bags which have not come in contact with RCRA, or suspected RCRA, waste per SOP 20-C-601.

- MATERIAL REVISED, ADDED, OR DELETED.

7.0 PROCEDURE (cont.)

7.6.1.7.2 Dispose of absorbent cloths and trash bags which have come in contact with RCRA, or suspected RCRA, waste per SOP 20-C-605.

7.6.1.8 Place the end of the COLIWASA into the appropriate composite sample container (Refer to Table 3).

7.6.1.8.1 If an organic analysis is required, complete Step 7.13.1 through Step 7.13.3 (Refer to Table 4 for appropriate sample container).

NOTE: Waste Technology shall determine if an organic analysis is required per the Sampling Plan.

7.6.1.9 Empty the sampler by slowly pulling the lower end of the T-handle away from the locking block.

7.6.1.10 If specified by supervision, repeat Steps 7.6.1.2 through 7.6.1.9 to collect samples from other points in the drum.

7.6.1.11 After changing drums, repeat Steps 7.6.1.2 through 7.6.1.10 until all the drums in the lot have been sampled.

7.6.2 Using the Glass COLIWASA

7.6.2.1 Check to ensure that the inner tubing and the outer sheath are not cracked.

7.6.2.2 Insert the inner tubing inside the sheath.

7.6.2.3 Raise the ground glass and the tubing several inches above the hole in the bottom of the sheath.

7.6.2.4 Slowly lower the COLIWASA vertically into the drum, keeping the ground glass end away from the hole in the bottom of the sheath.

NOTE: Lower the COLIWASA so that the levels of liquid inside and outside the sampler tube remain even. If the liquid level in the sampler tube is lower than the level outside the sampler, the rate is too fast and will result in a nonrepresentative sample.

R - MATERIAL REVISED, ADDED, OR DELETED.

7.0 PROCEDURE (cont.)

7.6.2.5 When the sheath hits the bottom of the drum, push the inner tube downward so that the ground glass end seals the end of the sheath.

7.6.2.6 Slowly withdraw the COLIWASA sampler with one hand ensuring the ground glass end is sealed against the tube bottom while wiping the outside of the sampler with a clean disposable cloth.

7.6.2.6.1 Dispose of absorbent cloths and trash bags which have not come in contact with RCRA, or suspected RCRA, waste per SOP 20-C-601.

7.6.2.6.2 Dispose of absorbent cloths and trash bags which have come in contact with RCRA, or suspected RCRA, waste per SOP 20-C-605.

7.6.2.7 Place the end of the COLIWASA into the appropriate composite sample container (Refer to Table 3).

7.6.2.7.1 If an organic analysis is required, complete steps 7.13.1 through 7.13.3 (refer to Table 4 for appropriate sample container).

NOTE: Waste Technology shall determine if an organic analysis is required per the Sampling Plan.

7.6.2.8 Empty the sampler by pulling the inner tube upward causing the ground glass end to separate from the outer tube bottom.

7.6.2.9 If specified by supervision, repeat Steps 7.6.2.2 through 7.6.2.8 to collect samples from other points in the drum.

7.6.2.10 After changing drums, repeat Steps 7.6.2.2 through 7.6.2.9 until all the drums in the lot have been sampled.

7.7 Collecting Secondary Samples of Dry Materials

7.7.1 Place the composite sample container on its side on the drum roller.

7.7.2 Set the drum roller timer for five minutes.

7.7.3 Turn on the drum roller.

7.7.4 Mix for five minutes and turn off the drum roller.

7.7.5 Place the drum in an upright position for five minutes to allow dust to settle.

- MATERIAL REVISED, ADDED, OR DELETED.

7.0 PROCEDURE (cont.)

7.7.6 Tare weigh a clean sample jar on the scale.

7.7.7 Remove the locking ring and lid from the composite sample container.

7.7.8 Using a clean grain sampler (Refer to Item 7.4), take a sample from the container.

7.7.9 Place the sample in the appropriate sample container (Refer to Table 2 or Table 3).

7.7.10 Repeat Steps 7.7.8 and 7.7.9 to collect samples from other points in the drum until an amount specified by supervision is collected.

NOTE: A minimum of two sample points is required.

7.7.11 Cap the sample jar after obtaining the secondary sample.

NOTE: No preservatives or other substances shall be added to the sample without the prior consent of the Analytical Laboratory.

7.7.12 Weigh the sample jar.

7.7.13 Complete the required records (Refer to Item 7.11).

7.7.14 Deliver the sample and completed documents to the Analytical Laboratory sample receiving room.

NOTE: All RCRA or suspected RCRA samples shall be delivered during the same shift in which they were collected.

7.7.14.1 If the Chain of Custody form is being used, deliver listed samples directly to the Laboratory.

NOTE: The operator obtaining the samples shall deliver the samples to the Laboratory without the use of Transportation personnel.

7.8 Collecting Secondary Samples - Moist or Sticky Materials

7.8.1 Tare weigh an appropriate sample jar (Refer to Table 2 or Table 3).

7.8.2 Open the composite sample container.

7.8.3 Using a pipe sampler, take a sample from the container per Steps 7.5.3 thru 7.5.5.

7.0 PROCEDURE (cont.)

7.8.4 Using a stainless steel spatula, push the sample out of the pipe into a clean five gallon can.

7.8.5 Repeat Steps 7.8.3 and 7.8.4 to collect four more samples.

NOTE: For the remaining samples, insert the pipe sampler at different points at the side of the container.

7.8.6 Blend the five core samples using the stainless steel spatula.

7.8.7 Using the stainless steel spatula, take five equal portions from different areas of the blend and place the portions in the appropriate sample container (Refer to Table 2 or Table 3).

NOTE: Sampling shall continue until an amount specified by supervision is collected.

NOTE: No preservatives or other substances shall be added to the samples without the prior consent of the Analytical Laboratory.

7.8.8 Place the unused secondary sample in the primary composite sample container and return the container to the lot.

7.8.9 Complete the required records (Refer to Item 7.11).

7.8.10 Deliver the sample and completed documents to the Analytical Laboratory sample receiving room.

NOTE: All samples shall be delivered during the same shift in which they were collected.

7.8.10.1 If the Chain of Custody form is being used, deliver listed samples directly to the Laboratory.

NOTE: The operator obtaining the samples shall deliver the samples to the Laboratory without the use of Transportation personnel.

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7.0 PROCEDURE (cont.)

7.9 Cleaning Sampling Equipment

NOTE: This cleaning procedure is not applicable to the automatic closed auger sampler.

NOTE: Cleaning shall be performed over a container marked with the appropriate 15-digit FMPC Lot Markings.

7.9.1 Using a warm detergent solution, wash sampling equipment thoroughly. Use a bottle brush to remove particulate matter, films, or other dirt as necessary.

CAUTION: THE LID SHALL BE KEPT ON THE DRUM CONTAINING THE USED RINSE SOLUTION WHEN NOT IN USE.

NOTE: Alquinox or Liquinox may be used as the cleaning detergent.

NOTE: Only non wire-wrapped brushes shall be used.

7.9.2 Rinse the sampler several times with tap water to remove detergent residues.

7.9.2.1 When the rinse container is full, process the contents as RCRA waste per SOP 20-C-605.

NOTE: The solution accumulated from rinsing the sampling equipment shall not be mixed except when directed by the supervisor.

7.9.3 Rinse the sampler with distilled water.

7.9.4 Drain excess water off the sampler.

7.9.5 Rinse the sampler with pesticide grade purity isopropanol and, if necessary, dry with clean dry cloth.

NOTE: Pesticide grade purity isopropanol is isopropanol that is below laboratory grade purity isopropanol.

7.9.6 Place the clean sampler into a clean plastic bag or wrap with aluminum foil.

7.9.7 Dispose of absorbent cloths and trash bags which have not come in contact with RCRA waste or suspected RCRA waste per SOP 20-C-601.

7.0 PROCEDURE (cont.)

7.9.8 Dispose of absorbent cloths and trash bags which have come in contact with RCRA waste or suspected RCRA waste per SOP 20-C-605.

7.9.9 Fill out and attach a "Clean Equipment" tag to sampler, Form No. FMPC-PRO-3128, (See Figure 4).

7.9.10 Store the sampler per item 7.10 unless the sampler is to be used immediately.

7.9.11 If directed by the supervisor, obtain a sample of the rinsate and forward to the Laboratory for analysis.

7.9.11.1 When an analysis is required, store rinsate container in a satellite accumulation container/area until the analysis results are received and disposition determined.

7.10 Storing Sampling Equipment

7.10.1 Place the clean samplers (except closed auger) in a clean polyethylene plastic bag or wrap with aluminum foil.

7.10.2 Seal the plastic bag with tape.

7.10.3 Place the samplers in a clean, protected area.

7.11 Record Requirements

NOTE: The following record requirements apply to all secondary samples collected by Plant 1 personnel.

NOTE: All data for RCRA or suspect RCRA materials shall be recorded in waterproof ink.

7.11.1 Record the following information on the "Enrichment Label", Form No. FMPC-PRO-306 M-145 (See Figure 6). Affix the completed label to the secondary sample container.

7.11.1.1 Sampling location.

7.11.1.2 Collector signature.

7.11.1.3 Type of material.

7.11.1.4 Type of sample.

R - MATERIAL REVISED, ADDED, OR DELETED.

7.0 PROCEDURE (cont.)

7.11.1.5 Lot number of material sampled.

7.11.1.6 Date sampled.

7.11.1.7 Time sampled (AM/PM or military time).

7.11.1.8 Net weight of the secondary sample.

7.11.1.9 Isotopic range (enriched, depleted).

7.11.2 DELETED.

7.11.2.1 DELETED.

7.11.2.2 DELETED.

7.11.2.3 DELETED.

7.11.2.4 DELETED.

7.11.2.5 DELETED.

7.11.2.6 DELETED.

7.11.2 Complete a "Report of Chemical Analyses", Form FMPC-T-200 (See Figure 8).

NOTE: Supervision shall specify analyses required.

7.11.2.1 If a sampling plan is in effect, do not complete Form FMPC-T-200 for RCRA Sampling.

7.12 Chain of Custody For Hazardous Determination Samples

NOTE: Plant 1 personnel shall be notified of all lots requiring Chain of Custody documentation.

7.12.1 Fill out an "Analytical Laboratory Sample Seal," Form No. FMPC-ES&H-2774 (See Figure 9) with the sample collector's name and badge number, date and time the sample was collected, and the drum and lot numbers.

- MATERIAL REVISED, ADDED, OR DELETED.

7.0 PROCEDURE (cont.)

7.12.2 Place the sample seal over the lid of the sample container.

NOTE: Tamper guard tape may be used if a sample seal is not available.

NOTE: The sample seal (or tamper guard tape) shall be attached so that the seal will break when the sample container is opened.

NOTE: Each container must be sealed immediately after sample is collected and labeled using waterproof ink.

7.12.3 Ensure that record requirements (Refer to Item 7.11) are complete.

7.12.4 Complete the "Chain of Custody" sheet, Form No. FMPC-PRO-3112 (See Figure 10).

7.12.4.1 If the material is being sampled according to a sampling plan, write "See Sampling Plan No. XXXX" under "Analyses Requested" on the form.

NOTE: The "Chain of Custody" sheet shall be signed each time physical control of the samples is transferred.

NOTE: More than one sample can be included on the custody form. When more than one form is required for a large shipment, each form shall be completed entirely.

7.12.5 DELETED.

7.12.6 Record the following information in the "Field Log Book".

NOTE: Log entries shall be recorded using waterproof ink in a written manner which can be easily read and understood.

NOTE: The log book shall be protected and kept in a safe place.

7.12.6.1 Purpose of sampling (RCRA determination, MC&A sampling).

7.12.6.2 Location of sampling.

7.12.6.3 Name of field contact (person responsible for answering questions concerning the sample).

7.12.6.4 Generator of waste and address (if different from location).

7.12.6.5 Type of process producing waste (if known).

- MATERIAL REVISED, ADDED, OR DELETED.

7.0 PROCEDURE (cont.)

7.12.6.6 Type of waste.

7.12.6.7 Declared/suspected waste components and concentrations.

7.12.6.8 Number and volume of sample taken.

7.12.6.9 Description of sampling point.

7.12.6.10 Date and time of collection.

7.12.6.11 Sample collector sample identification number(s).

7.12.6.12 Type of container the sample was taken from.

7.12.6.13 Drum inventory number (if available) as specified by MC&A (unique 4-digit number stenciled in white on the side of the waste drum).

7.12.6.14 FMPC lot marking system number.

7.12.6.15 Drum number (if available)

7.12.6.16 All other numbers on the drum(s).

7.12.6.17 Any written information on the drum describing the material contained in the drum.

7.12.6.18 Sampling method used.

7.12.6.19 Material description as observed by the collector.

7.12.6.20 Preservatives used.

NOTE: No preservatives or other substances shall be added to the samples without the prior consent of the Analytical Laboratory.

7.12.6.21 Any field measurements made, such as pH.

7.12.6.22 Signature of person recording the data.

7.12.7 Deliver the sample and completed documents to the Analytical Laboratory sample receiving room.

NOTE: All samples shall be delivered to the lab for analysis during the same shift in which the samples were collected.

- MATERIAL REVISED, ADDED, OR DELETED.

7.0 PROCEDURE (cont.)

7.13 Liquid Organic Analysis

7.13.1 Carefully fill the septum bottle with the sample liquid.

NOTE: The liquid must reach the lip of the bottle.

7.13.2 Slide the teflon septum across the lip of the bottle covering the opening and then screw the plastic lid on the bottle.

7.13.3 Check the septum bottle for air bubbles by turning the bottle upside down.

NOTE: Organic analysis requires that no air bubbles be present in the septum bottle.

7.13.3.1 If air bubbles are present, empty the bottle and repeat steps 7.13.1 through 7.13.3 until the air bubbles are not present.

8.0 APPLICABLE FORMS

8.1 FMPC-PRO-3130, "Sampling Deviation/Special Handling Requirements"

8.2 FMPC-PRO-1342, "Container Printweigh Card"

8.3 FMPC-PRO-1579, "Sample Weight Ticket"

8.4 FMPC-PRO-3128, "Clean Equipment"

8.5 DELETED.

8.6 FMPC-PRO-306 M-145, "Enrichment Label"

8.7 DELETED.

8.8 FMPC-T-200, "Report of Chemical Analyses"

8.9 FMPC-OS&H-2774, "Sample Seal"

8.10 FMPC-PRO-3112, "Chain of Custody"

8.11 DELETED.

- MATERIAL REVISED, ADDED, OR DELETED.

TABLE 1

SAMPLERS

MATERIAL	SAMPLER	PROCEDURE ITEM NUMBER
Dry, compacted solids	Auger	7.3
Dry, fluffy, solids	Grain	7.4
Moist solids	Pipe	7.5
Liquids, sludges	COLIWASA	7.6

TABLE 2

SAMPLE CONTAINERS FOR RESIDUE SAMPLING

SAMPLER	TYPE OF SAMPLE CONTAINER
Auger	Glass or plastic
Grain	Glass or plastic
Pipe	Glass or plastic

- MATERIAL REVISED, ADDED, OR DELETED.

TABLE 3

SAMPLE CONTAINERS FOR RCRA OR RCRA SUSPECT SAMPLING

SAMPLER	TYPE OF SAMPLE CONTAINER
Grain	Shatterproof glass bottle with teflon cap liner
Pipe	Shatterproof glass bottle with teflon cap liner
Coliwasa	Shatterproof glass bottle with teflon cap liner

TABLE 4

SPECIAL SAMPLE CONTAINERS FOR ORGANIC ANALYSIS

SAMPLER	ANALYSIS	TYPE OF SAMPLE CONTAINER
Coliwasa	volatile	Septum Bottle (40 ml.)
Coliwasa	semi-volatile	Septum Bottle (40 ml.)
Pipe	volatile	Septum Bottle (40 ml.)
Pipe	semi-volatile	Septum Bottle (40 ml.)

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SAMPLING DEVIATION/SPECIAL HANDLING REQUIREMENTS

SAMPLING LOCATION: _____ DATE: _____

MATERIAL TYPE: _____ CONTAINER TYPE: _____

REASON FOR SAMPLING DEVIATION/SPECIAL HANDLING:

_____

_____

_____

_____

_____

_____

LINE OF SPECIAL REQUIREMENTS:

_____

_____

_____

_____

_____

_____

_____

APPROVALS:

_____
MC&A Representative

_____
Solid Waste Compliance Representative

_____
Waste Operations Supervisor

_____
Cognizant Engineer

SAMPLING DEVIATION/SPECIAL HANDLING REQUIREMENTS
FMPC-PRO-3130
Figure 1

- MATERIAL REVISED, ADDED, OR DELETED.

FMPC-PRO-1342 (REV. 2/5/87)

PRODUCTION RECORDS - PLANT 1

CONTAINER PRINTWEIGH CARD

WO	CODE	WEIGHT	CONTR. NO.
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

1. MATERIAL TYPE:
2. FMPC LOT NO.:
3. SAMPLING METHOD (CHECK ONE): (P) ☐ PIPE (A) ☐ Auger (S) ☐ System
4. TARE WEIGHT SOURCE (CHECK ONE): (V) ☐ Vendor (F) ☐ FMPC (X) ☐ Stat. Sample ____ -lbs.
5. VENDOR LOT NO.:
WEIGHED: Date: ____ Gross ____ Tare ____
6. DATE OF MOISTURE DETERMINATION
7. DATE SAMPLE PREPARED:
8. SAMPLE AMOUNT TO VENDOR
9. MOISTURE CONTENT: — H_2O
10. SCALE NO.:
11. PLANT RPT. NO.:
12. TEST SW
13. TOTAL NO. CONTRS.:
14. REPORT COPIES REQ.: ☐ 6 ☐ 12
15. WEIGHING INST.: ☐ Before Sample ☐ After Sample
16. OPERATOR'S NAME:
17. DATA VERIFIED BY:

POS. GUIDES

Card No. ____ of ____

SAMPLE WEIGHT			

CODES: TD - Test Drum
SA - Scale Adjusted
CS - Changed Scales
R-SA - Reweigh-Scale Adjusted

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1 Tabulating Section
2 Production Records - Plant 1 (RECORD COPY)

CONTAINER PRINTWEIGH CARD
FMPC-PRO-1342
Figure 2

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SAMPLING PLANT

SAMPLE WEIGHT TICKET

VENDOR:

LOT NO.: DATE:

CHECK (√) ☐ Partial ☐ Complete ☐ Sample Reject

GROSS

TARE

NET

	WEIGHT	
	Gross	
	Tare	
	Net	

RETURNED DRUM NO.:

PRO-1579 (9/4/59)

SAMPLE WEIGHT TICKET
FMPC-PRO-1579
Figure 3

MATERIAL REVISED, ADDED, OR DELETED.

CLEANED BY: _____

DATE: _____

Cleaned according to sop : _____

PC-OPR-3128 (6/22/89)

CLEAN EQUIPMENT
FMPC-PRO-3128
Figure 4

R - MATERIAL REVISED, ADDED, OR DELETED.

DELETED

DELETED
DELETED
Figure 5

- MATERIAL REVISED, ADDED, OR DELETED.

FMPC-SAMPLE LABEL/RCRA MATERIAL-ENRICHED

SAMPLING LOCATION	~~U-235 NO ENRICHMENT~~
COLLECTOR	
TYPE OF MATERIAL	
TYPE OF SAMPLE	
LOT NUMBER OR IDENT	
DATE / TIME / NET WT	

FMPC FORM 306 M-146 (REV 11/29/88)

ENRICHMENT LABEL
FMPC-PRO-306 M-145
Figure 6

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DELETED
DELETED
Figure 7

- MATERIAL REVISED, ADDED, OR DELETED.

RT OF CHEMICAL ANALYSES

Write Firmly — Part 4 must be legible.)

FMPC-T-200 (REV. 5/8/86)

Lab. Nos. _____

Lot No. _____

ses Requested _____

	LAB. NO.	IDENTIFICATION	ANALYTICAL DATA					

.T NO.:

MPLED:

TED BY:

KS

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Approved By _____ Date of Report _____

REPORT OF CHEMICAL ANALYSES
FMPC-T-200
Figure 8

952

R - MATERIAL REVISED, ADDED, OR DELETED.

RATION DURE	SAMPLING RESIDUE AND WASTE MATERIALS	SOP 1-C-101 AREA: Plant 1
Authorization: (Signature on File) J. T. Grumski, Waste Management	Supersedes: 1-C-101, 06-29-72	Issue Date: 6-16-89

ANALYTICAL LABORATORY SAMPLE SEAL

Collector: _____ (SIGNATURE)

Date Collected: _____

Time Collected: _____ ☐ AM ☐ PM

Lot No.: _____

Drum No.: _____

FMPC-ES&H-2774 (3/18/87)

SAMPLE SEAL
FMPC-OS&H-2774
Figure 9

- MATERIAL REVISED, ADDED, OR DELETED.

RESTORATION PROCEDURE	SAMPLING RESIDUE AND WASTE MATERIALS	SOP 1-C-101 AREA: Plant 1
Authorization: (Signature on File) J. T. Grumski, Waste Management	Supersedes: 1-C-101, 06-29-72	Issue Date: 6-16-89

FMPC
PRODUCTION OPERATIONS
CHAIN-OF-CUSTODY RECORD

Request No. _____

Company's Name and Address: _____ Phone No.: _____ Carrier Way Bill No.: _____ Lab Destination _____

Name of Sampler(s): _____ Phone No.: _____ Badge No.: _____

SAMPLE NUMBER	SAMPLE LOCATION AND DESCRIPTION (Waste Type)	SAMPLED DATE	SAMPLED TIME	SAMPLE TYPE	CONTAINER TYPE	ANALYSES REQUESTED (please refer to last column)						SAMPLE COND ON RECEIPT	TYPES OF ANALYSES
													1 Complete analysis
													2 Total U
													3 Total Th
													4 EP Toxicity
													5 Isotopic
													6 Th-228
													7 Th-232
													8 Ra-226
													9 UnCorr Samp (U Concentr)
													10 TnCorr Samp (Th Concentr)
													11 _____
													12 _____
													13 _____
													14 _____
													15 _____

Field Information: _____

Possible Sample Hazards: _____

SIGNATURES:

1. Relinquished By: _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By: _____
2. Relinquished By: _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By: _____
3. Relinquished By: _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By: _____
4. Relinquished By: _____ (SIGNATURE / TITLE / COMPANY / INCLUSIVE DATES) Received By: _____

NO.	DISTRIBUTION OF COPIES
1	To Accompany Samples
2	Field Copy

CHAIN OF CUSTODY
FMPC-PRO-3112
Figure 10

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DELETED
DELETED
Figure 11

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RECORD OF ISSUE/REVISIONS

DATE	REV NO.	DESCRIPTION AND AUTHORITY
06-29-72	N/A	SOP has been revised to detail secondary sampling of both dry and wet materials as well as primary sampling.
10-30-84	N/A	Corrections in format made to Industrial Health and Safety and Environmental paragraphs, no text change. Changes made by Quality Control Department.
10-30-84	N/A	Quality Control Department replacement pages. List of Effective Pages added.
10-14-85	N/A	General update of SOP to reflect current operations per SOP Change Request No. 1009, initiated by R. C. Dicken.
04-23-87	N/A	Revised to implement Chain of Custody requirements for hazardous waste sampling of stored inventories to meet EPA requirements. Section 3 added per Request No. P87-092, initiated by D. J. Carr.
06-16-89	N/A	Reissued to update and reformat per Request No. P89-320, initiated by B. L. Krupa.
07-11-90	1	Revised to update RCRA requirements and incorporate references to SOP 20-C-101, 20-C-102, and 20-C-904 per Request No. P90-017, initiated by B. Krupa/J. Angert and Request P90-162, initiated by J. Angert.
03-11-91	2	Revised to incorporate CIOs C90-056 and C90-057 per Request Nos. P90-340 and P90-342.

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STEP 10.

956A

STEP II.

PL-FMPC-3009
Supercedes
Internal Special
FMPC-2205
Dated May 1990

WASTE MINIMIZATION AND POLLUTION PREVENTION AWARENESS PLAN

Issue Date: 4/30/91

FEED MATERIAL PRODUCTION CENTER

WESTINGHOUSE MATERIALS COMPANY OF OHIO

P. O. Box 398704
Cincinnati, Ohio 45239-8704

TABLE OF CONTENTS

1.0 INTRODUCTION/BACKGROUND 1

1.1 Purpose of Plan 1

1.1.1 Legal Requirements 1

1.1.2 Education 2

1.1.3 Set Goals and Plan Actions 2

1.2 Scope of Plan 3

1.2.1 Benefits of Waste Minimization 3

1.2.2 Waste Minimization Definition and Methods 3

1.3 FMPC Mission, Site Description, and Background Information 6

1.3.1 Mission Statement 6

1.3.2 FMPC Site Description 6

1.3.3 Major Waste Stream Categories at the FMPC 8

2.0 POLICY 11

2.1 Statement of Management Support/Commitment 11

2.2 Policy Statement 11

3.0 RESOURCES 11

3.1 Program Budget 11

3.2 Personnel 12

4.0 STRATEGY, OBJECTIVES, ACCOMPLISHMENTS, AND GOALS 12

4.1 Strategy 12

4.2 Program Objectives 12

4.3 Accomplishments 13

4.3.1 Source Elimination 14

4.3.2 Recycling/Reuse 14

4.3.3 Segregation/Decontamination 14

4.3.4 Volume Reduction 15

4.3.5 Organizational 15

4.4 Goals 17

4.4.1 Source Elimination 17

4.4.2 Recycling/Reuse 17

4.4.3 Segregation/Decontamination 18

4.4.4 Volume Reduction 20

4.4.5 Organizational 21

5.0 ORGANIZATION AND STAFF RESPONSIBILITIES 22

5.1 Site Manager 22

5.2 Waste Minimization Coordinator 22

5.3 Waste Minimization Team 22

5.4 Department Waste Coordinator 23

5.5 Employee 23

.0 DESCRIPTION OF WASTE MINIMIZATION PLAN 25

6.1 Waste Assessments/Audits 25

6.1.1 Identify Waste Stream and Collect Baseline Information 25

6.1.2 Assess Waste Streams 30

6.1.3 Prioritize Waste Streams 30

6.1.4 Identify and List Options 31

6.1.5 Evaluate and Rank Options 31

6.1.5.1 Technical Evaluation 31

6.1.5.2 Economic Cost/Benefit Evaluation 31

6.1.5.2.1 Low Level Waste 32

6.1.5.2.2 RCRA/Mixed Waste 32

6.2 Waste Minimization Implementation 32

6.3 Waste Tracking System 32

6.3.1 Tracking From Point of Generation to Point of Disposition 32

6.3.2 Program Activity Tracking 33

6.4 Technology Transfer 35

6.5 Program Evaluation 35

7.0 TRAINING, AWARENESS, AND INCENTIVES 36

7.1 Employee Training Goals 36

7.2 Employee Awareness Goals 36

7.3 Employee Incentives, Awards, and Recognition 37

8.0 **REFERENCES** 38

LIST OF FIGURES AND TABLES

			Page
Figure	1	Three Major Technical Alternatives	5
	2	Tri-State Area Map	7
	3	FMPC Site Map	7
	4	FY-90 Waste Minimization Accomplishments	16
	5	FY-91 Predicted Waste Minimization	19
	6	Waste Minimization and Pollution Prevention Line of Communication	24
	7	Dry, Contaminated, Compactible Waste Sources	27
	8	Composition of Dry, Contaminated Compactible Waste	28
	9	FY-90 RCRA Generation	29
	10	Waste Assessment Flow Diagram	34
	11	Waste Minimization Accomplishments Bullet List	39
	12	Waste Minimization Goals Bullet List	41

TABLES

Table 1	Waste Stream Identification	10
Table 2	Waste Stream Generation Predictions	26

INTRODUCTION/BACKGROUND

1.1 Purpose of Plan

The purpose of this plan is to establish the FMPC 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 FMPC. In addition to establishing the FMPC Waste Minimization and Pollution Prevention Awareness Program, this plan also meets legal requirements, educates FMPC personnel, sets goals, and plans actions regarding waste minimization and pollution prevention.

1.1.1 Legal Requirements

This plan meets EPA requirements established under the Resource Conservation and Recovery Act (RCRA) regarding waste minimization and the Superfund Amendments and Reauthorization Act (SARA) Title III; Emergency Planning and Community Right-to-Know Act (EPCRA). RCRA requires that generators of hazardous waste "have a program in place to reduce the volume and toxicity of waste generated to the extent that is economically practicable." Section 313 of EPCRA states that techniques used to identify source reduction opportunities be submitted to the EPA for each toxic chemical that requires a Form R, the Toxic Release Inventory. This includes employee recommendations, external and internal audits, participative team management, and material balance audits.

The plan also satisfies requirements of DOE Orders 5400.1, 5400.3, and 5820.2A.

DOE Order 5400.1 defines general requirements for pollution prevention awareness and waste minimization programs at DOE facilities. The plan complies with the Order by:

1) establishing waste minimization and pollution prevention goals and objectives, and by identifying strategies and time tables for attaining them;

2) providing the overall framework for the design and implementation of the FMPC Waste Minimization and Pollution Prevention Awareness Program; and

3) assigning specific responsibilities for complying with the requirements of the Order.

DOE Order 5400.3 establishes DOE hazardous and radioactive mixed waste policies and requirements. The Order implements the requirements of RCRA within the framework of the environmental programs established under DOE Order 5400.1.

DOE Order 5820.2A establishes policies, guidelines, and minimum requirements by which DOE manages its radioactive waste. The Order states that the "generation, treatment, storage, transportation, and/or disposal of radioactive wastes, and the other pollutants or hazardous substances they contain, shall be accomplished in a manner that minimizes the generation of such wastes across program office functions and complies with all applicable federal, state, and local environmental, safety, and health laws and regulations and DOE requirements." The Order also requires the preparation of a Waste Management Plan for each site that generates, treats, stores, or disposes of radioactive, mixed, or hazardous waste.

DOE's "Waste Reduction Policy Statement" consolidates the requirements of DOE Orders 5400.1, 5400.3, and 5820.2A. The statement requires all DOE Program Offices and Field Operations to institute a waste reduction policy to reduce the total amount of waste that is generated and disposed of by DOE facilities through waste minimization (source reduction and recycling) and waste treatment.

1.1.2 Education

This plan has been written with the intended purpose of educating personnel on waste minimization principles, methods, and strategies.

Education of all personnel will assist the incorporation of waste minimization principles into the management's operating philosophy. Waste minimization will then be routinely integrated into site SOPs and design criteria, just as safety and quality principles are currently incorporated.

1.1.3 Set Goals and Plan Actions

The FMPC Waste Minimization and Pollution Prevention Awareness Program incorporates site specific goals and planned actions into the program. The goals that are set will be aggressive goals that emphasize implementation and execution.

Actions that are implemented are specific tasks whose completion achieves actual, measurable reductions in waste generation.

Refer to section 4.4 for a listing of site specific goals.

1.2 Scope of Plan

The waste minimization program applies to all present and future activities at the FMPC which generate any type of waste. The program is an organized, comprehensive, and continual effort to systematically reduce waste generation.

1.2.1 Benefits of Waste Minimization

Waste minimization contributes to the protection of human health and the environment by reducing risks to potentially exposed people and environmental impacts from releases of pollutants. In addition, an aggressive waste minimization program demonstrates the FMPC's commitment to environmental protection.

Other potential benefits from a sound waste minimization program include the following: 1) reduce or eliminate liabilities associated with the generation of wastes; 2) comply with regulations; 3) reduce waste management and compliance costs; 4) reduce resource usage; 5) reduce or eliminate inventories and releases of hazardous chemicals reportable under the Emergency Planning and Community Right-To-Know Act (EPCRA); and 6) improve public image.

1.2.2 Waste Minimization Definition and Methods

Waste Minimization is the reduction, avoidance, or elimination of waste generation. Methods of waste minimization include:

- source reduction
- recycle, reuse, reclaim
- treatment to reduce volume, toxicity, or mobility

The Environmental Protection Agency (EPA) has stated its regulatory intent and preference for reducing waste at the source over management of waste after it is generated. Source reduction is the major priority in the FMPC's waste minimization program, as this eliminates the problems associated with handling wastes.

Source reduction activities and techniques include material substitution, process optimization or modification, technology changes, and administrative changes including inventory control and housekeeping practices, such as waste segregation.

The second priority is to recycle, reuse, or reclaim those potential waste materials that cannot be eliminated or minimized.

Recycling allows potential waste materials, or materials destined for disposal, to be put to a beneficial use. Recycling techniques are characterized as use, reuse, and reclamation (resource recovery).

The third priority is to treat all waste that is generated to reduce the volume, toxicity, or mobility prior to storage or disposal.

Waste minimization at the FMPC will be accomplished by following the above mentioned hierarchy of environmental protection practices.

THREE MAJOR TECHNICAL ALTERNATIVES

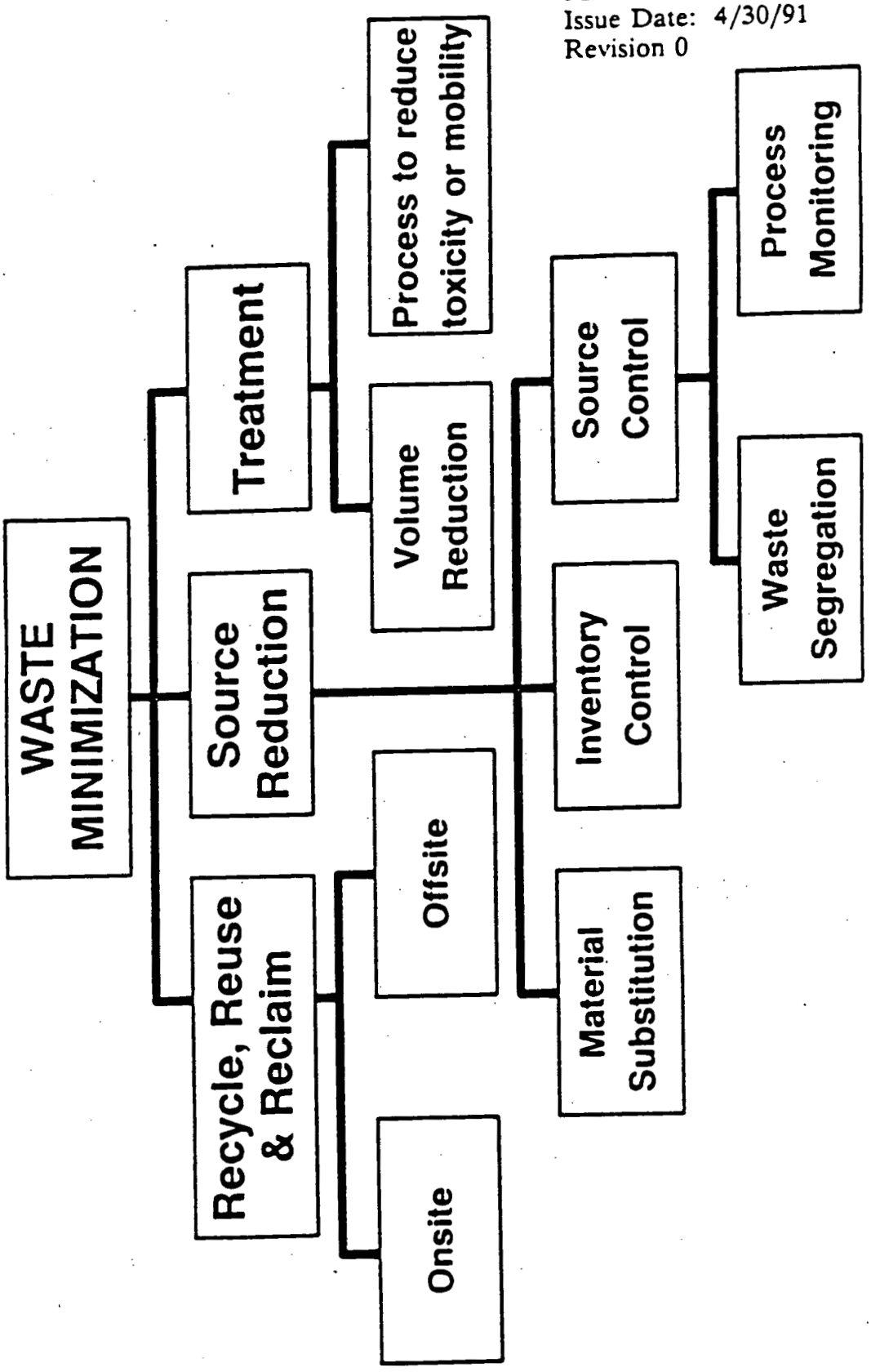


FIGURE 1
Three Major Technical Alternatives

1.3 FMPC Mission, Site Description, and Background Information

1.3.1 Mission Statement

The FMPC is owned by the U. S. Government; Westinghouse Materials Company of Ohio is the prime contractor to the U. S. Department of Energy (DOE). The FMPC's mission is environmental restoration and waste management.

1.3.2 FMPC Site Description

The FMPC is located in southwestern Ohio near the unincorporated village of Fernald, Ohio (See Figure 2). Cincinnati, Ohio, is approximately 20 miles to the southeast, and Hamilton, Ohio, is approximately 10 miles to the northeast of the FMPC. The FMPC comprises 1,050 acres and is bounded by Ohio Route 126 to the north, a dairy farm to the east, Willey Road to the south, and Paddy's Run Road to the west (See Figure 3). The production area covers approximately 136 acres near the center of the FMPC.

The historic mission of the FMPC was the conversion of uranium-containing residues and uranium compounds to high purity uranium metal for use as feed in U. S. defense programs. Production processes generated solid waste that was grouped into four categories: low level waste (LLW), hazardous waste, mixed waste, and conventional industrial waste. In 1989, the FMPC mission changed to one primarily of environmental restoration and waste management.

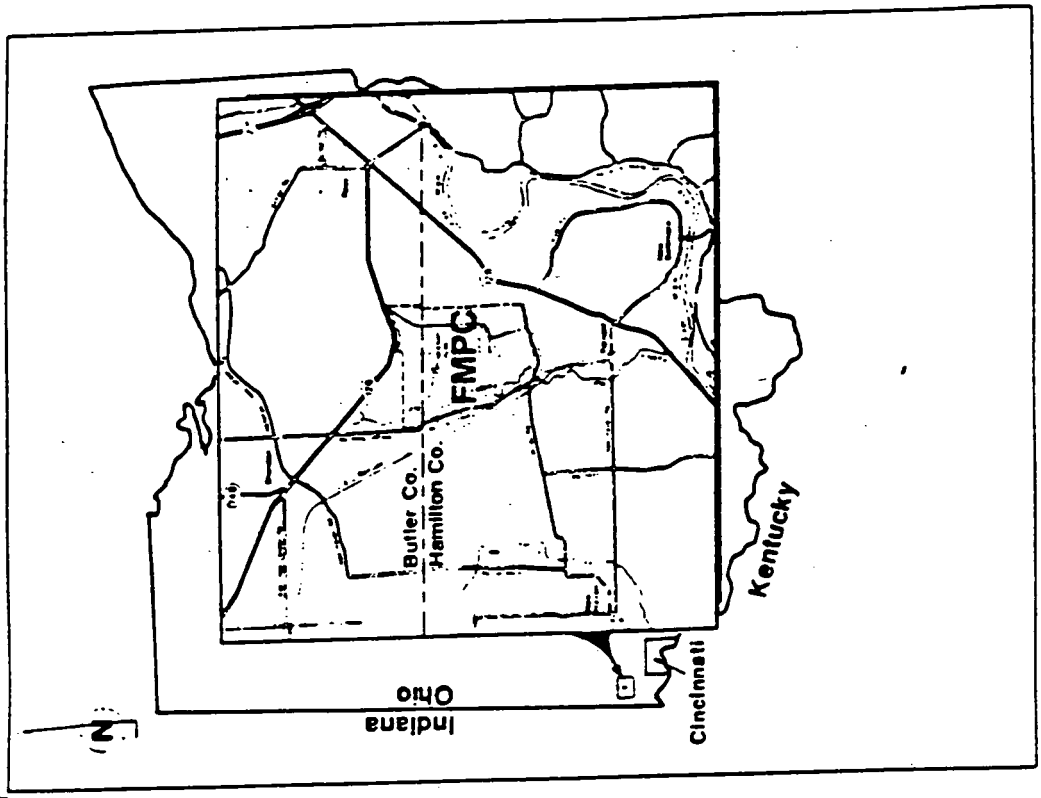


FIGURE 3
FMPC Site Map

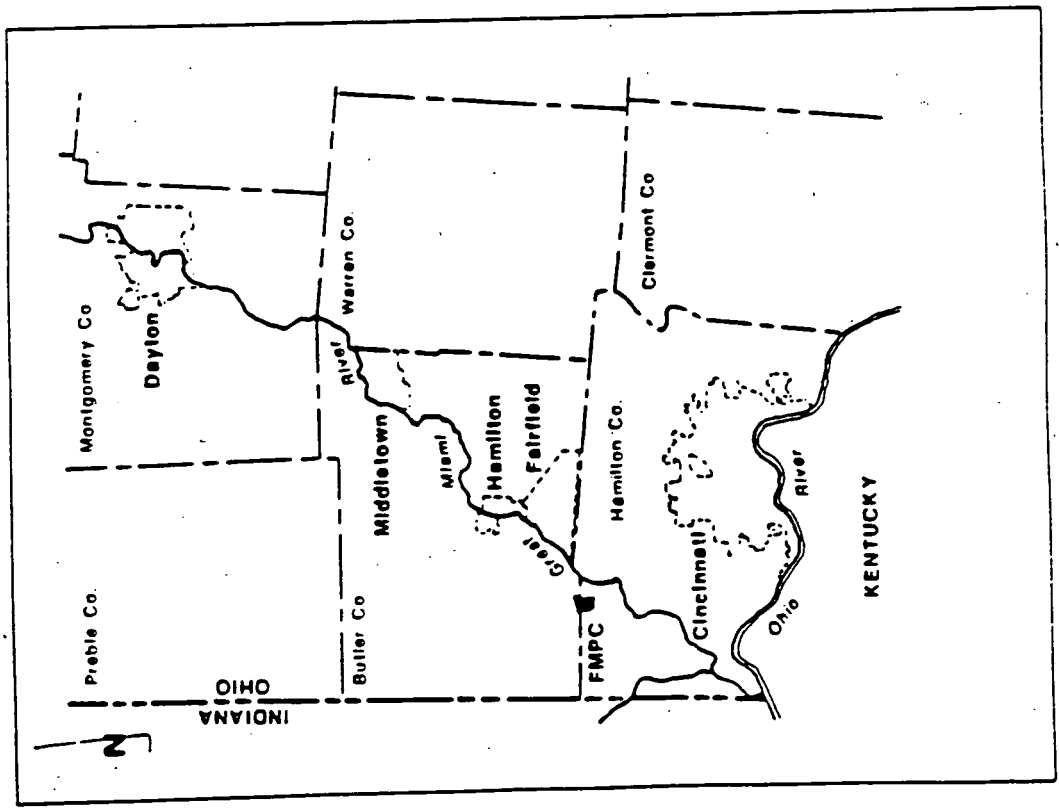


FIGURE 2
Tri-State Map

1.3.3 Major Waste Stream Categories at the FMPC

There are four major waste categories generated onsite at the FMPC:

- Sanitary Waste
- Low Level Waste (LLW)
- RCRA/Mixed Waste
- Toxic Substance Control Act (TSCA) Waste

Each of these categories is further broken down into specific waste streams that correspond to waste streams identified in the FMPC 30-Year Roadmap.

1) Sanitary Waste
   - Noncontaminated Trash
   - Noncontaminated Rubble/Soil
   - Water Treatment Lime Sludge
   - Flyash
2) Low Level Waste (LLW)
   - Dry Compactible Waste
   - Compactible Refuse Metal/Scrap Drums
   - Noncompactible Refuse Metal
   - Scrap Recoverable Metal
   - Contaminated Rubble Soil
   - Contaminated Asbestos
   - Dry Noncompactible Waste
   - Wet and Dry Drummed Residues

3) RCRA/Mixed Waste

4) TSCA Waste

- Contaminated PCB Sludges/Liquids

Refer to Table 1 for a description of each waste stream. Each waste stream's generation rate and predicted generation rate will be discussed in section 6.1.1.

WASTE STREAM IDENTIFICATION
TABLE 1

Waste Stream	Description
Sanitary Waste	
Noncontaminated Trash	Paper and office trash generated from the uncontrolled areas such as administrative waste.
Noncontaminated Rubble/Soil	Rubble/soil generated by construction with <35 pCi/g contamination
Water Treatment Lime Sludge	Lime sludge generated from waste treatment operations, stored in 2 lime sludge ponds.
Flyash	Generated from the burning of coal in the Boiler Plant.
LLW	
Dry Compactible Waste	Compactible paper collected from the controlled area. Includes office trash, cardboard, clothing, packaging materials, floor sweepings, plastic, etc.
Compactible Refuse Metal/ Scrap Drums	Refuse metal that can be compacted or volume reduced. Includes empty drums, old lockers, metal cabinets, desks, and chairs.
Noncompactible Refuse Metal	Refuse metal that cannot be compacted and is packaged for disposal.
Scrap/Recoverable Metal	Decontaminated metal, equipment, and vehicles from onsite activities such as construction and maintenance.
Contaminated Rubble/Soil	Category 2; generated by construction with >35 pCi/g <100 pCi/g contamination. Category 3; generated by construction with >100 pCi/g contamination. Packaged for offsite shipment.
Contaminated Asbestos	All asbestos generated onsite from construction and maintenance activities.
Dry, Noncompactible Waste	Includes wood pallets, scrap filters, rubber, plastic, scrap wood, excess equipment, machinery, tools, and soil/rubble from nonconstruction activities onsite.
Wet & Dry Drummed Residues	Drummed floor sweepings, dust collector residues, sump sludges, filter cakes, and safe-shutdown residues.
RCRA/Mixed Waste	All RCRA/mixed waste that is generated from onsite activities.
TSCA Waste	
Contaminated PCB Sludges/ Liquids	All contaminated PCB sludges/liquids, ballasts, capacitors, transformers, and PCB contaminated trash and rags.

POLICY

2.1 Statement of Management Support/Commitment

The FMPC is totally committed to minimizing the generation of waste by giving preference to source reduction, material substitution, and environmentally sound recycling over treatment, control, and disposal of such wastes. Top level management have taken appropriate action to provide adequate personnel, budget, training, and material on a continuing basis to ensure that the objectives of the Waste Minimization and Pollution Prevention Awareness Program are met.

2.2 Policy Statement

The Waste Minimization and Pollution Prevention Awareness Program is supported by FMPC management which is made evident by the following Waste Minimization Policy statement declarations:

- The FMPC shall employ the most cost effective and environmentally acceptable methods to manage and minimize the generation of waste.

- The FMPC's commitment to Waste Minimization and Pollution Prevention Awareness Program activities is demonstrated by conducting waste management activities to accomplish site cleanup and waste minimization through source reduction, recycling of materials, substitution of less hazardous materials, process optimization or modification, technology changes, and waste segregation.

3.0 RESOURCES

3.1 Program Budget

The following chart itemizes the funds allocated for the Waste Minimization and Pollution Prevention Awareness Program.

Activity	Funding in $K per year					
	FY-92	FY-93	FY-94	FY-95	FY-96	Total
Waste Minimization Planning	67	48	48	48	48	240
Waste Minimization Implementation	69	72	72	72	72	357
Total	236	120	120	120	120	597

3.2 Personnel

The planning and implementation of the Waste Minimization and Pollution Prevention Awareness Program requires one full-time employee to coordinate and report on waste minimization program status.

4.0 STRATEGY, OBJECTIVES, ACCOMPLISHMENTS, AND GOALS

4.1 Strategy

The Waste Minimization and Pollution Prevention Awareness Program strategy is to develop a systematic approach that all site organizations can use to minimize waste generation. Accurate and current information on waste generation and waste management costs provides the basis for implementation of specific waste minimization techniques and technologies. The essential elements of the FMPC strategy include the following:

- Identify and characterize all wastes generated onsite.
- Prioritize waste streams for waste minimization actions.
- Select target waste streams and methods to eliminate or reduce waste generation.
- List waste minimization options and evaluate options on a technical and economic basis.
- Implement waste minimization actions.
- Document and evaluate waste minimization progress.

4.2 Program Objectives

The objectives of the Waste Minimization and Pollution Prevention Awareness Program are to:

- Foster a philosophy to conserve resources and create a minimum of waste and pollution in achieving site strategic objectives.
- Promote the use of nonhazardous materials in plant operations to minimize the potential risks to human health and the environment.

- Reduce or eliminate the generation of waste materials through materials substitution, improved housekeeping, process optimization, technology changes, and inventory control to achieve minimal adverse effects on the air, water, and land.

- Enhance communication of waste minimization objectives, goals, and ideas laterally and vertically among site organizations.

- Promote integration and coordination of waste generators and waste managers on waste minimization matters.

- Characterize waste streams and develop a baseline of waste generation data.

- Identify and implement methods and technologies for waste minimization.

- Target policies, procedures, or practices that may be barriers to waste minimization.

- Create incentives for pollution prevention.

- Collect and exchange waste minimization information through technology transfer, outreach, and educational networks.

- Enhance employee awareness of pollution prevention goals, objectives, and methods.

- Develop specific goals and schedules for waste minimization activities.

- Comply with federal and state regulations and DOE requirements for waste minimization.

- List waste minimization options and evaluate options technically and economically.

- Implement waste minimization actions.

- Document and evaluate waste minimization progress.

4.3 Accomplishments

The following is a list of waste minimization actions that have been implemented at the FMPC.

1158

4.3.1 Source Elimination

4.3.1.1 Eliminated the use of lead-based paints and substituted with leadfree equivalents.

4.3.1.2 Initiated a chemical product inventory reduction program in the Maintenance Department. Identified 130 chemical products, thus far, that can be eliminated due to infrequent use or product duplication.

4.3.1.3 Eliminated the use of 1,1,1-trichloroethane throughout the site, with the exception of the paint shop.

4.3.2 Recycling/Reuse

4.3.2.1 Formed the FMPC Total Quality Recycling Team to develop, implement, and oversee sitewide recycling programs.

4.3.2.2 Implemented a paper recycling program for administrative paper waste. Currently, 30 tons of paper a year are projected to be collected.

4.3.2.3 Initiated an aluminum can recycling effort, with annual collection projected at 1.5 tons. Some cans were donated to a program to aid area burn victims, with the bulk of the cans going to the Crosby School Ecology Club.

4.3.2.4 Began the reuse of Xylene in the Analytical Laboratory. The lab formerly generated approximately 3 liters of Xylene waste a month; and all of this is now recycled.

4.3.3 Segregation/Decontamination

4.3.3.1 Segregated approximately 13,500 cu. yds. of rubble/soil and office waste during 1990. The rubble/soil was classified as Category 1 and stockpiled in the K-65 storage area. The office waste was sent to a sanitary landfill.

4.3.3.2 Decontaminated, for unrestricted release, more than 485 tons of scrap steel.

4.3.4 Volume Reduction

4.3.4.1 Compacted 4,850 cu. yds. of noncontaminated trash to a volume of 1,070 cu. yds.

4.3.4.2 Compacted 2,300 cu. yds. of contaminated dry, compactible waste to a volume of 770 cu. yds.

4.3.4.3 Compacted 65,000 cu. ft. of compactible, refuse metal/scrap drums to a volume of 22,000 cu. ft.

4.3.5 Organizational

4.3.5.1 Conducted a baseline waste inventory that identified all LLW and RCRA waste streams onsite. Defined the current generation rate of each of the waste streams identified by type, source, and quantity. This will be used to evaluate the FMPC waste output and determine the best methods to minimize it.

4.3.5.2 Predicted generation rates for each waste stream identified in the baseline report for FY 1991 through 1994.

4.3.5.3 Formed a Waste Minimization Team to prioritize and perform assessments of waste streams targeted as possible candidates for waste minimization actions.

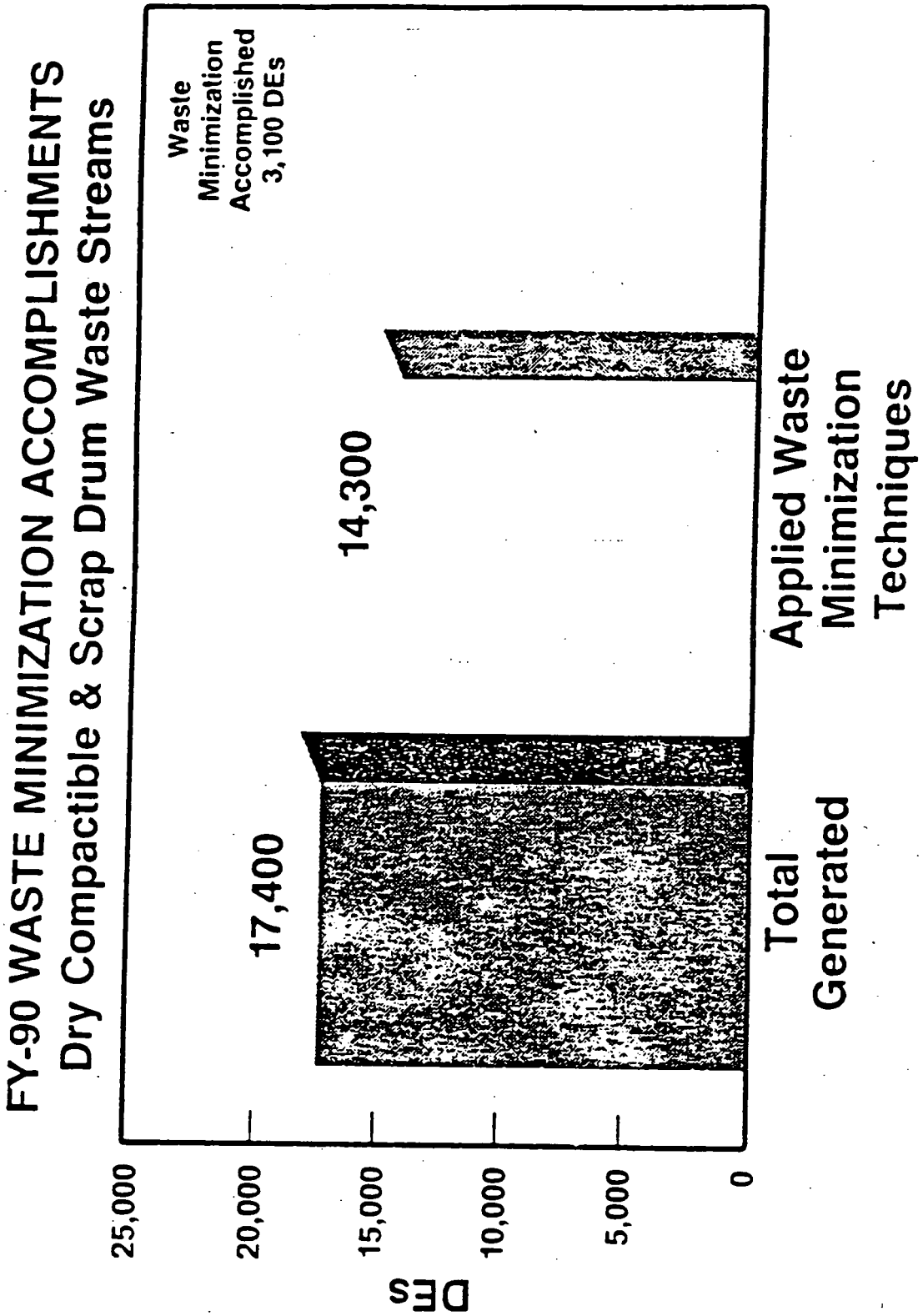


FIGURE 4
FY-90 Waste Minimization Accomplishments

4.4 Goals

The following is a list of site specific goals for the FMPC.

4.4.1 Source Elimination

4.4.1.1 Conduct sampling and analysis on the benzene contaminated oils generated from the garage to classify as LLW. This is estimated to eliminate 128 DEs of stored mixed oils in the RCRA warehouses, as well as the 2-3 DEs a month generated in the garage.

4.4.1.2 Review all chemicals used onsite and eliminate all infrequently used or duplicated products by December 1991. Purchase only chemical products that have been assessed to be indispensable.

4.4.1.3 Substitute cloth "anti-Cs" for all paper "anti-Cs" (except for asbestos work) by September 1991. This will reduce the contaminated compactible waste stream by approximately 500 cubic feet per year.

4.4.2 Recycling/Reuse

4.4.2.1 Maintain the office paper, computer paper, and aluminum can recycling effort. The FMPC Total Quality Recycling Team will continue to implement and assess these recycling programs, as well as educate personnel on the benefits of recycling.

The office paper recycling program was initiated in February 1991. This program is expected to collect 30 tons a year of recyclable paper.

The computer paper recycling program has been in operation since 1977. In 1990, 7.42 net tons of computer paper were collected. The anticipated collection rate is eight tons per year.

The aluminum can recycling effort benefits the Crosby Elementary School Ecology Club and has been operating since 1991. It is estimated that 1.5 tons per year will be collected for recycling.

4.4.2.2 Initiate a LaserJet cartridge recycling campaign in 1991. Approximately 500 cartridges are used per year at the FMPC. A recycling effort will save up to 40-50 percent on the cost of cartridges; this equates to a savings of approximately $16,000 - $20,000 a year.

4.4.2.3 Begin the operation of a distillation unit by January 1992 to recover spent solvents from the paint shop. The operation of this unit will produce a 90 percent recovery rate for the solvents run through the system. This will reduce the amount of solvents placed into RCRA storage warehouses from 6 DEs a year to 0.6 DEs a year.

4.4.2.4 Initiate the recycling of trichlorotrifluoroethane (Freon) in the Analytical Laboratory by May 1991. Approximately five liters per month of Freon is being generated by the lab during grease and oil determinations of NPDES samples. Recycling will be accomplished by the use of a distillation unit that will collect the vapors emitted and condense them back to reusable Freon. A 100 percent recovery is anticipated.

4.4.2.5 Start operation of the new Drum Reconditioning Facility in Plant 8 by September 1991. Approximately 18,000 empty drums will be generated per year from the Rotary Kiln and Rotex operations. Approximately 50 percent of these drums will be reconditioned and stored onsite or transferred to other DOE sites for reuse.

4.4.3 Segregation/Decontamination

4.4.3.1 Update the laundry system by September 1991. Several driers will be designated for clean clothing and one dryer designated for contaminated clothing, which will be equipped with a HEPA filter. This new system will provide segregation of radioactive clothing from nonradioactive clothing.

4.4.3.2 Initiate a demonstration project for the process area compactible waste by FY-92. This will be a demonstration project in Building 12 to segregate waste from nonradiological areas, within the process area, to determine whether waste can be released to a sanitary landfill. It is anticipated that 75 - 80 percent of the compactible waste from Building 12 will be considered nonradiologically controlled. This equates to approximately 1,150 DEs per year that could be released as clean.

4.4.3.3 Decontaminate 5,000 DEs (575 tons) a year of scrap metal from the scrap metal piles and sell to an offsite vendor for reuse. This will reduce the risk of contamination to the environment.

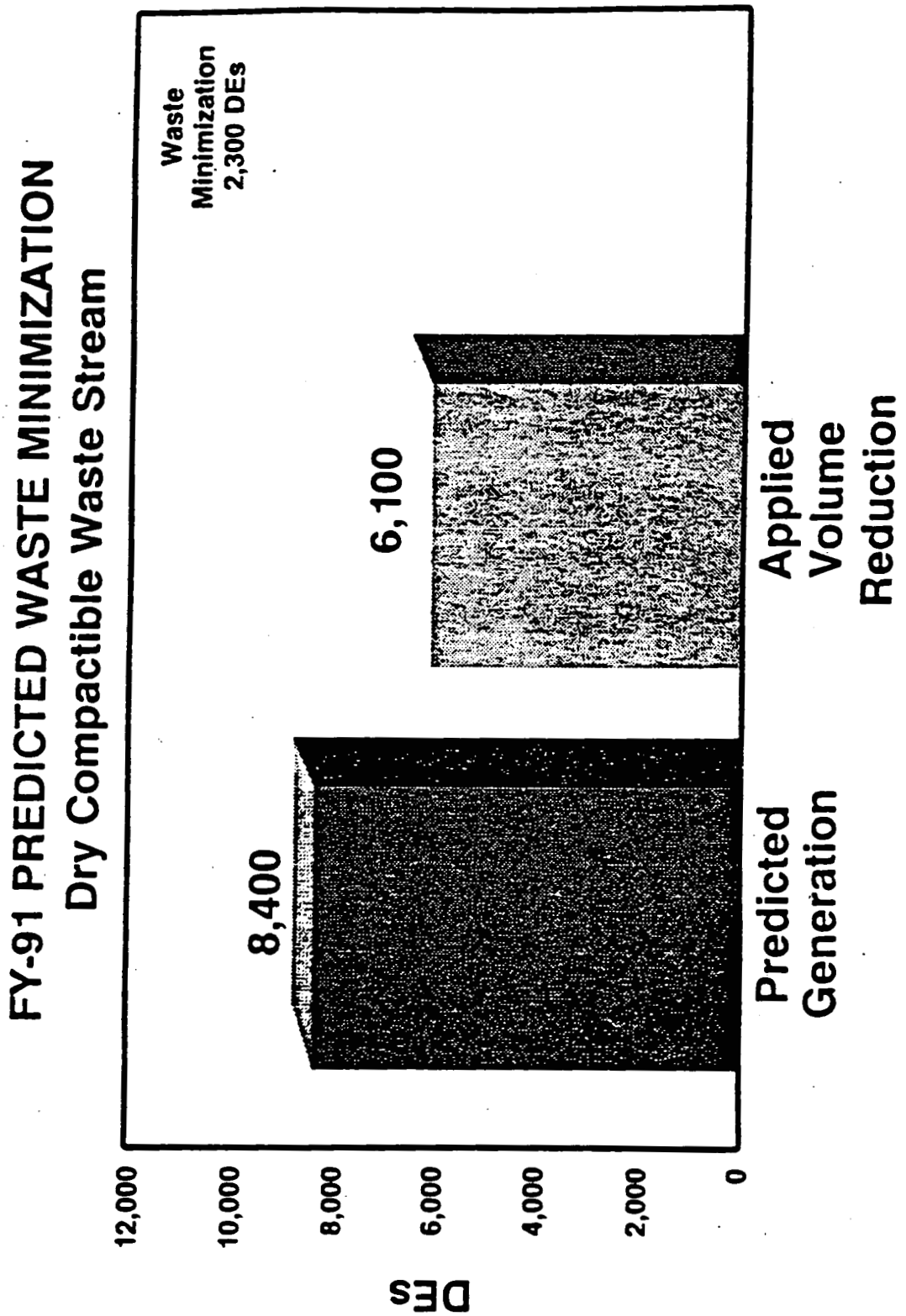


FIGURE 5
FY-91 Predicted Waste Minimization

4.4.4 Volume Reduction

4.4.4.1 Implement a super compaction system in Plant 8 by September 1991. This will volume reduce the compactible waste streams from a 3:1 compaction ratio to a 7:1 compaction ratio. This will produce a reduction in volume of approximately 1,100 DEs, which equates to a savings of approximately $171,000 for an 8 month period of operation.

4.4.4.2 Implement the Plant 8 Rotex repackaging station by July 1991. This will volume reduce the drummed residue waste stream by 20 percent, and will produce a reduction in volume of approximately 1,500 DEs. This equates to a savings of approximately $240,000 for a 10 month period of operation.

4.4.4.3 Implement the new Plant 8 rotary kiln by September 1991. This will volume reduce the wet, nonrecoverable residue waste stream by 30 percent and will produce a reduction in volume of approximately 2,400 DEs. This equates to a savings of approximately $384,000 for an 8 month period of operation.

4.4.4.4 Evaluate the feasibility of a Trash and Scrap Monitoring Facility. This facility would volume reduce the contaminated dry compactible and noncontaminated trash waste streams through shredding and compaction.

The TSMF would collect and monitor all dry compactible waste from the controlled, as well as the uncontrolled areas. The waste would be monitored numerous times to assure the cleanliness of the material. It would then be sent offsite to a local landfill. If it is monitored to be contaminated, it would be shipped to the Nevada Test Site (NTS). This facility would also provide an additional benefit through the ability to segregate specific recyclable wastes.

4.4.4.5 Initiate a demonstration project by FY-92 for solids precipitation at Plant 8 by exchanging lime with True Clear. The estimated volume reduction of the packaged wet residue waste stream is from 15 - 2 DEs per week.

4.4.5 Organizational

4.4.5.1 Integrate waste minimization and pollution prevention awareness concepts into an existing related training course. The training program will include waste minimization concepts that should be incorporated into every job aspect, so that it is routinely integrated into each phase of an operating procedure or design consideration.

4.4.5.2 Develop and conduct a class on waste minimization for the DOE/Westinghouse School for Environmental Excellence.

4.4.5.3 Inform FMPC employees of current and ongoing waste minimization accomplishments by use of pictorial essays, site bulletin boards, and site communication media (i.e., Focus, Communicator, FMPC Update). This will be done on a monthly basis.

4.4.5.4 Implement pollution prevention/waste minimization slogan contests to heighten awareness of these issues.

4.4.5.5 Renew the waste minimization suggestion boxes and award employees whose waste minimization suggestions are efficient and cost effective.

4.4.5.6 Perform ongoing waste assessments of targeted waste streams to analyze waste minimization actions that have been implemented.

5.0 ORGANIZATION AND STAFF RESPONSIBILITIES

5.1 Site Manager

The site manager is responsible for the facility's commitment to achieving a successful waste minimization program. The manager approves plans, policies, goals, and milestones and is responsible for ensuring that all employees are trained in waste minimization and pollution prevention awareness.

5.2 Waste Minimization Coordinator

The Waste Minimization Coordinator serves as chairperson of the Waste Minimization Team. The Waste Minimization Coordinator writes and updates the facility-specific waste minimization plan on an annual basis.

5.3 Waste Minimization Team

The responsibilities of the Waste Minimization Team include:

- Defining the objectives of the waste minimization program in accordance with this plan.
- Communicating program objectives to the site.
- Obtaining waste generator support and input for the program.
- Facilitating integration and coordinated interaction between waste generators and waste managers on waste minimization matters.
- Establishing waste minimization goals and objectives.
- Sponsoring ongoing employee awareness and training.
- Establishing a waste tracking system.
- Prioritizing waste streams for assessment.
- Selecting teams to conduct process waste assessments.
- Evaluating the technical and economic feasibility of options to reduce waste generation.
- Recommending and ranking options for implementation.

- Monitoring performance of waste minimization options that have been implemented and evaluating performance according to success criteria.
- Monitoring and reporting progress of the waste minimization program.
- Recommending personnel for achievement and incentive awards.
- Facilitating technology transfer and pollution prevention awareness.

5.4 Department Waste Coordinator

Each department participates in the waste minimization program through an assigned Waste Coordinator for their respective organization. The Department Waste Coordinator serves as the primary contact for all waste minimization activities and departmental reporting. Department Waste Coordinators serve on the Waste Minimization Team.

5.5 Employee

Employees are responsible for following approved waste minimization techniques and procedures to evaluate the potential for waste minimization in their work.

FMPC
WASTE MINIMIZATION & POLLUTION PREVENTION AWARENESS
LINE OF COMMUNICATION

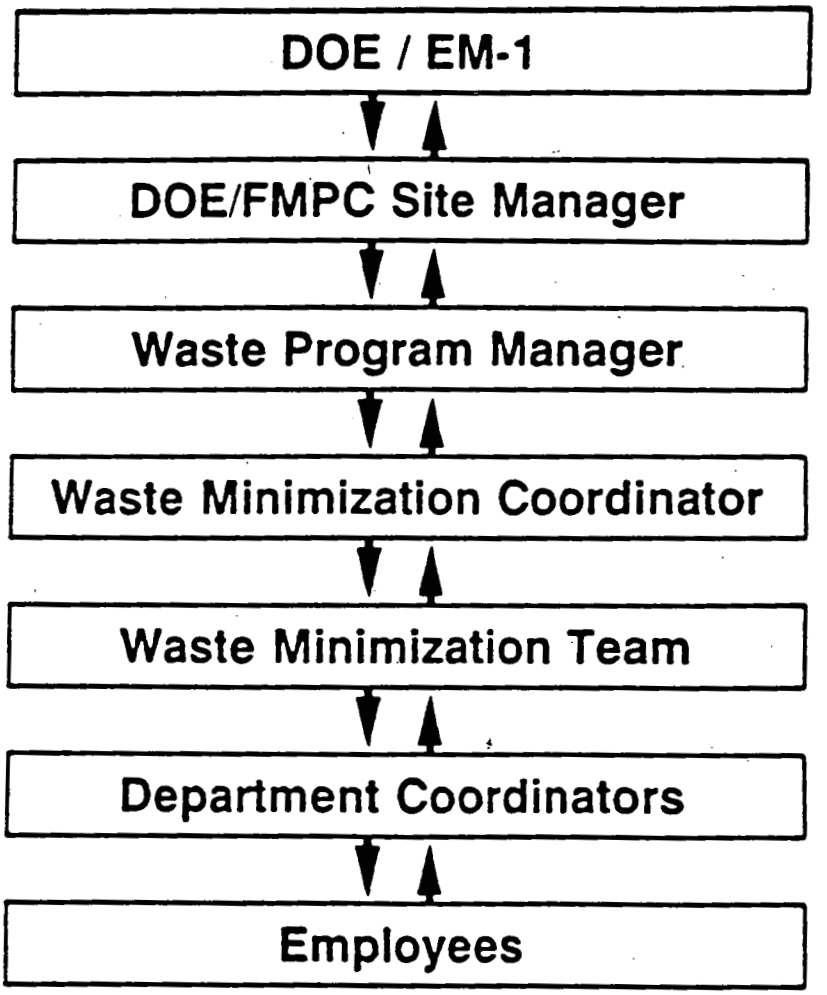


FIGURE 6
Waste Minimization & Pollution Prevention Line of Communication

6.0 DESCRIPTION OF WASTE MINIMIZATION PLAN

6.1 Waste Assessments/Audits

Waste assessments are conducted as part of an ongoing program to identify, screen, and analyze options to reduce the generation of waste.

6.1.1 Identify Waste Stream and Collect Baseline Information

The first task during a waste assessment is to identify and characterize all waste streams onsite. Current generation rates were defined by type, source, and quantity in a Baseline Inventory Report in December 1990. In February 1991, the Waste Generation Prediction Report predicted waste generation trends for current waste streams at the FMPC. Predictions were made for FY-91, 92, 93, 94. The data from these reports becomes an inventory record and will become part of a site waste data base. The information will be used to prioritize the waste streams and target specific waste streams for waste minimization actions.

Refer to the following tables and figures for Waste Stream Baseline information.

- Table 2 - FMPC Waste Stream Generation Rates and Predictions
- Figure 7 - Dry Contaminated Compactible Waste Sources
- Figure 8 - Composition of Dry, Contaminated Compactible Waste
- Figure 9 - RCRA Generation 1990

C = Generated
SH = Shipped
ST = Stored

WASTE STREAM GENERATION PREDICTIONS (Table 2)

(All figures in DEs: 1 DE = 7.4 cubic feet)
NOTE: All compactible waste streams, unless generated, are reported as uncompacted; unless shipped as compacted.

WASTE STREAMS	FY-90	FY-91	FY-92	FY-93	FY-94	COMMENTS
Sanitary Waste						
Non-contaminated Trash	17,700 C 3,900 SH	17,700 C 3,900 SH	17,700 C 3,900 SH	17,700 C 3,900 SH	17,700 C 3,900 SH	Offsite Rumpke compactor, 4.5:1 compaction ratio.
Non-contaminated Rubble/Soil (Cat. 1)	49,000 C	—	—	—	—	Stored at K-65 storage area. < 35 pCi/g, generated by construction
Water Treatment Lime Sludge	1,800 C 55,000 ST	1,800 C 56,800 ST	1,800 C 58,600 ST	1,800 C 60,400 ST	1,800 C 62,200 ST	Stored in two lime sludge ponds west of the west water tower
Flyash	22,000 C 600,000 ST	22,000 C 622,000 ST	22,000 C 644,000 ST	22,000 C 666,000 ST	22,000 C 688,000 ST	Stored south of the west Stormwater Retention Basin (SWRB)
TOTALS	90,500	41,500	41,500	41,500	41,500	
Low-Level Waste						
Dry Compactible Waste	8,400 C 2,200 SH	8,400 C	* 8,400 C	* 8,400 C	* 8,400 C	FY-90, 91 Plant 2/3 trash baler, 3:1 compaction ratio FY-92,93,94 Plant 8 super compaction system, 7:1 compaction ratio assumed
Compactible Refuse Metal/ Scrap Drums	9,000 C 2,900 SH	17,100 C	*33,000 C	*33,000 C	*33,000 C	FY-91 Plant 1 drum baler, 3:1 compaction ratio FY-92,93,94 Plant 8 super compaction system
Non-compactible Refuse Metal	15,000 C 9,500 SH	1,800 C	250 C	250 C	250 C	Refuse metal from Bldg 69 and construction generated metals. Packaged for offsite disposal.
Scrap/Recoverable Metal	4,200 C	1,750 C	250 C	250 C	250 C	Decontaminated scrap metals, vehicles and equipment from construction, and maintenance.
Contaminated Rubble/Soil						
Category 2	25,100 C	—	—	—	—	Stored north of Plant 1, stockpile area. 35 pCi/g < 100 pCi/g, generated by construction
Category 3	14,600 C 8,100 SH	6,000 C	4,000 C	No projections made	No projections made	Stored for offsite disposal. > 100 pCi/g, generated by construction
Contaminated Asbestos	1,900 C 3,700 ST	2,400 C 6,100 ST	500 C 6,600 ST	250 C 6,850 ST	250 C 7,100 ST	FY-90,91,92 include asbestos generated by construction projects FY-93,94 No projections made for construction projects. Asbestos stored onsite pending approval by NTS of a Class 1 Landfill Permit
Dry Non-compactible Waste	3,600 C 3,300 SH	11,000 C	4,000 C	4,000 C	4,000 C	Wood pallets, scrap fibers, rubber, plastic, scrap wood, soils, maintenance activities, excess machinery, equipment and tooling. Packaged for offsite disposal
Wet & Dry Residues	1,500 C 410 SH	3,500 C	2,000 C	3,500 C	2,000 C	Dust collector residues, sludges, filter cakes, floor sweepings, and shutdown residues
TOTALS	83,200	51,950	52,400	49,450	48,150	

C = Generated
SH = Shipped
ST = Stored

WASTE STREAM GENERATION PREDICTIONS (Table 2)

(All figures in DEs: 1 DE = 7.4 cubic feet)
NOTE: All compactible waste streams, unless generated, are reported as uncompacted; unless shipped as compacted.

WASTE STREAMS	FY-90	FY-91	FY-92	FY-93	FY-94	COMMENTS
RCRA Waste						
RCRA/Mixed Waste	387 C** 8,300 ST	406 C 8,706 ST	406 C 9,112 ST	406 C 9,518 ST	406 C 9,924 ST	FY-91,92,93,94 RCRA generation increase of 5% due to anticipated increase in decontamination. Stored onsite
TSCA Waste						
Contaminated PCB Sludges/Liquids	19 C 42 ST	5 C 47 ST	0 47 ST	0 47 ST	0 47 ST	FY-92,93,94 No PCB generation is anticipated. CWDs not yet generated for construction projects. Stored in onsite PCB warehouse
RCRA Chemicals	0	400 C	130 C	No projections	No projections	Liquids from decontamination, contaminated clothing, equipment, etc. Packaged for offsite disposal

* All dry compactible waste and compactible refuse metal/scrap drums will be compacted in super compaction system. Packaged for offsite disposal
** CY-90

TABLE 2
Waste Stream Generation Predictions

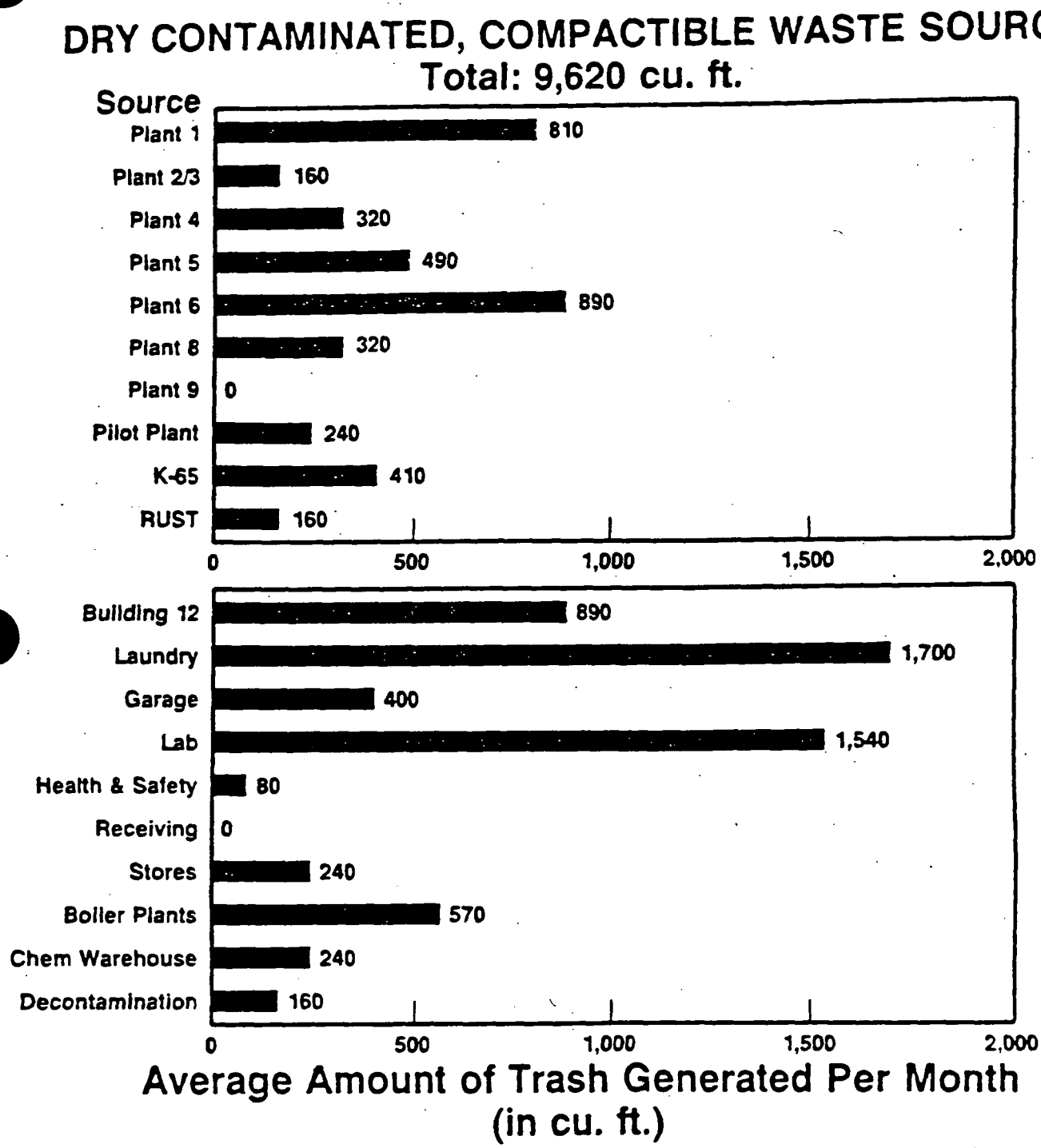


FIGURE 7
Dry, Contaminated, Compactible Waste Sources

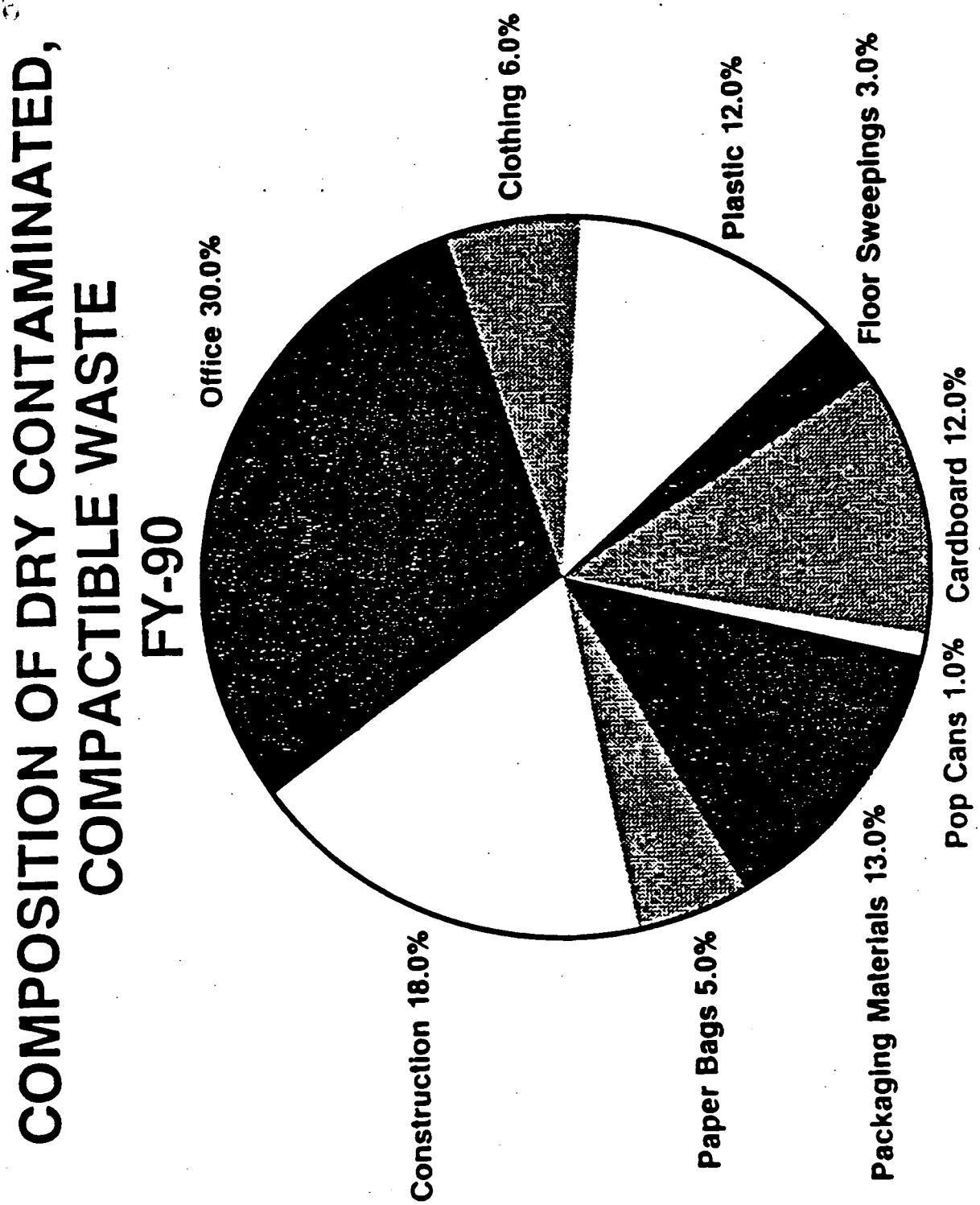


FIGURE 8
Composition of Dry, Contaminated Compactible Waste

RCRA GENERATION 1990

Figure 5

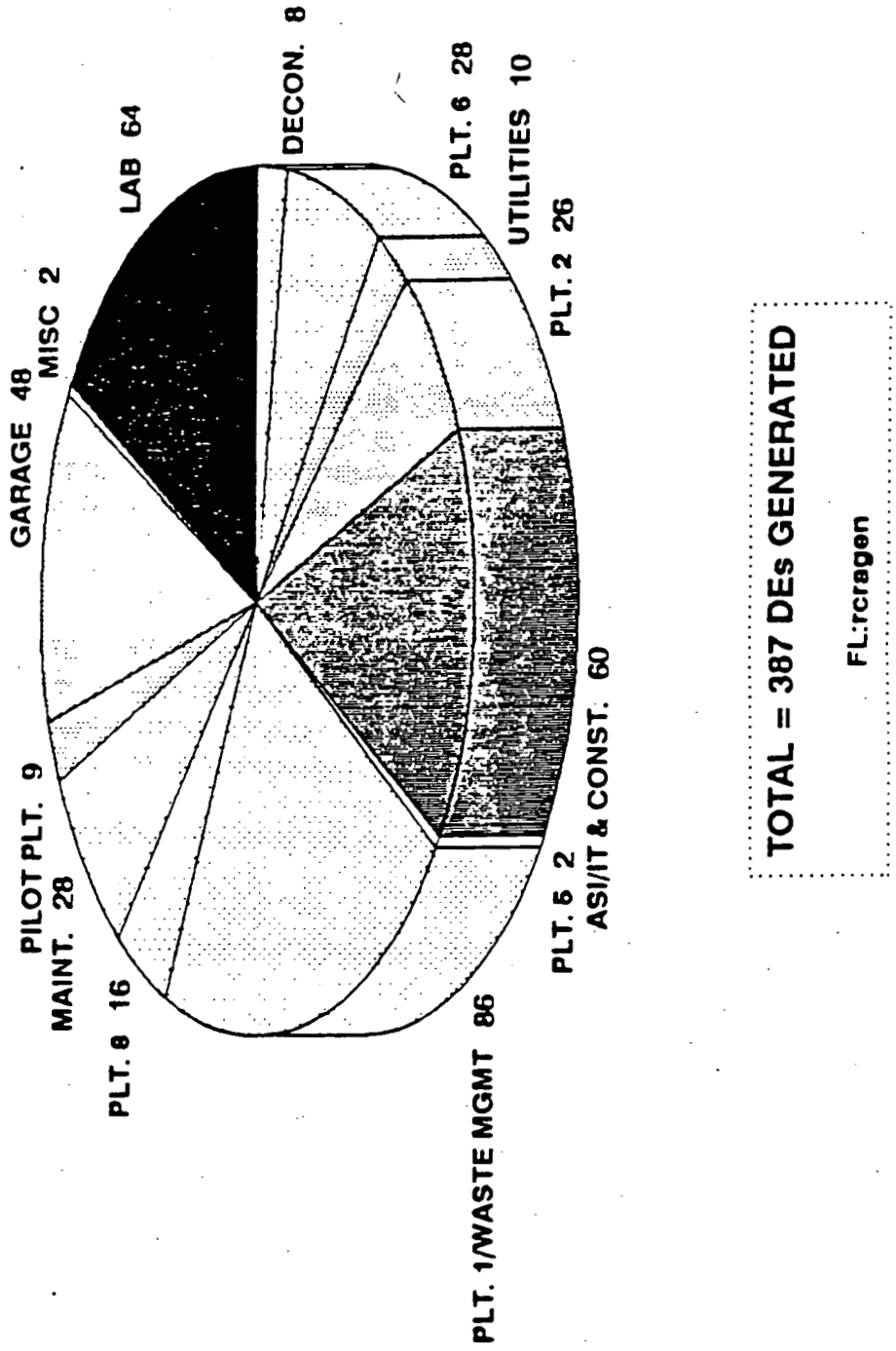


FIGURE 9
FY-90 RCRA Generation

6.1.2 Assess Waste Streams

Assessments of all waste-generating operations at the FMPC will be conducted by Waste Assessment Teams organized by the Waste Minimization Team. The assessment teams consists of individuals who can furnish specialized expertise that will be needed to conduct the assessments of specific waste streams identified by the Waste Minimization Team.

The assessment teams are responsible for evaluating and identifying waste minimization opportunities for their particular waste stream. Each team reports the data and findings from the assessment to the Waste Minimization Team and recommends options for waste minimization. The assessment team then monitors and evaluates the progress of an implemented waste minimization action on their specific waste stream and report successes, modifications, or further evaluation.

6.1.3 Prioritize Waste Streams

The Waste Assessment Team has the responsibility of prioritizing waste streams for waste minimization actions. The waste assessments will concentrate on the most important waste problems first, and then move on to the lower priority problems as the time, personnel, and budget permit.

Listed below are some of the considerations for prioritizing waste streams to assess:

- Compliance with current and future regulations.
- Costs of waste management (storage, treatment, disposal).
- Potential environmental and safety liability.
- Quantity of waste.
- Hazardous properties of the waste.
- Safety concern to employees.
- Potential for (or ease of) minimization.

6.1.4 Identify and List Options

The final phase of the assessment is for the team to develop a comprehensive set of waste minimization options. Completion of waste stream flow diagrams, material balances, and baseline information permits the identification of inefficiencies that may be potential waste minimization projects.

The process of identifying options first concentrates on source reduction options, followed by recycling technologies. Identifying options is done as part of a group brainstorming session that encourages creative and independent thinking.

6.1.5 Evaluate and Rank Options

The Waste Minimization Team evaluates the potential technical success and economic cost/benefit of each option identified by the Waste Assessment Team.

6.1.5.1 Technical Evaluation

The technical evaluation must consider facility restraints such as safety, available space, available utilities, vendor services, and any special expertise required. All organizations that might be affected by the change should contribute to the evaluation.

6.1.5.2 Economic Cost/Benefit Evaluation

Economic evaluation of options is performed using various cost elements and savings. The criteria used for selecting options is associated with capital costs or operating costs. An important item of operating cost is the avoidance or reduction of onsite and offsite waste treatment, storage, and disposal costs. Unit costs for handling waste have steadily increased, and reductions in waste volume will yield immediate savings.

For the purpose of this report and the waste minimization goals that have been listed in section 4.4, the following measures were used to evaluate the options identified.

6.1.5.2.1 Low Level Waste

LLW was evaluated by analyzing the cost of offsite disposal. For volume reduction calculations, a figure of $160 per drum equivalent (DE) was used as a disposal cost. A DE has a volume of 7.4 cu. ft. The potential savings are listed in section 4.4. under volume reduction.

6.1.5.2.2 RCRA/Mixed Waste

The FMPC generates approximately 400 DEs of RCRA/mixed waste per year (refer to Figure 9). The waste that is generated is drummed and placed into onsite RCRA warehouses. The cost of maintaining (storing) one DE of RCRA waste is estimated at $400 per DE. Along with the monetary cost of storing RCRA/mixed waste are the legal complications of storing this waste, which include: regulatory liability; cradle-to-grave responsibility; detailed record-keeping; limited disposal options; and surveillance issues.

In evaluating the options for waste minimization for RCRA mixed waste streams, operating cost and storage complications were the important criteria used.

6.2 Waste Minimization Implementation

The Waste Minimization Team identifies the department or organization that is responsible for devising the minimization method and implementing the change in operation. The implementing organization allocates the required funding and manpower to accomplish the action. The executing organization is responsible for achieving the minimization goals set by the Waste Minimization Team and for communicating any problems to the team.

6.3 Waste Tracking System

6.3.1 Tracking From Point of Generation to Point of Disposition

The major responsibility for tracking wastes from their point of generation to the point of disposition will be Materials Control and Accountability (MC&A).

MC&A currently tracks all nuclear materials onsite. They utilize a computerized database system that tracks all nuclear material that is received, stored, moved, packaged, or shipped.

MC&A will be tracking all waste onsite in the future. An all-materials inventory is currently taking place, which will incorporate all waste streams into the database system.

The database system shows the source of the waste, generation date, type of material, volume, net weight, and disposition. This database system will serve as a baseline for tracking waste minimization efforts and will provide data needed for evaluation and performance of waste minimization options. Changes in waste generation cannot be meaningfully measured unless the information is collected both before and after a waste minimization option is implemented.

6.3.2 Program Activity Tracking

The Waste Minimization Team is responsible for tracking the progress of waste minimization actions. Each member of the team is assigned a waste minimization option that is implemented, and will be responsible for tracking the progress of the action. Monthly team meetings may be held to evaluate the options and review data collected by the team member.

FMPC
WASTE ASSESSMENT FLOW DIAGRAM

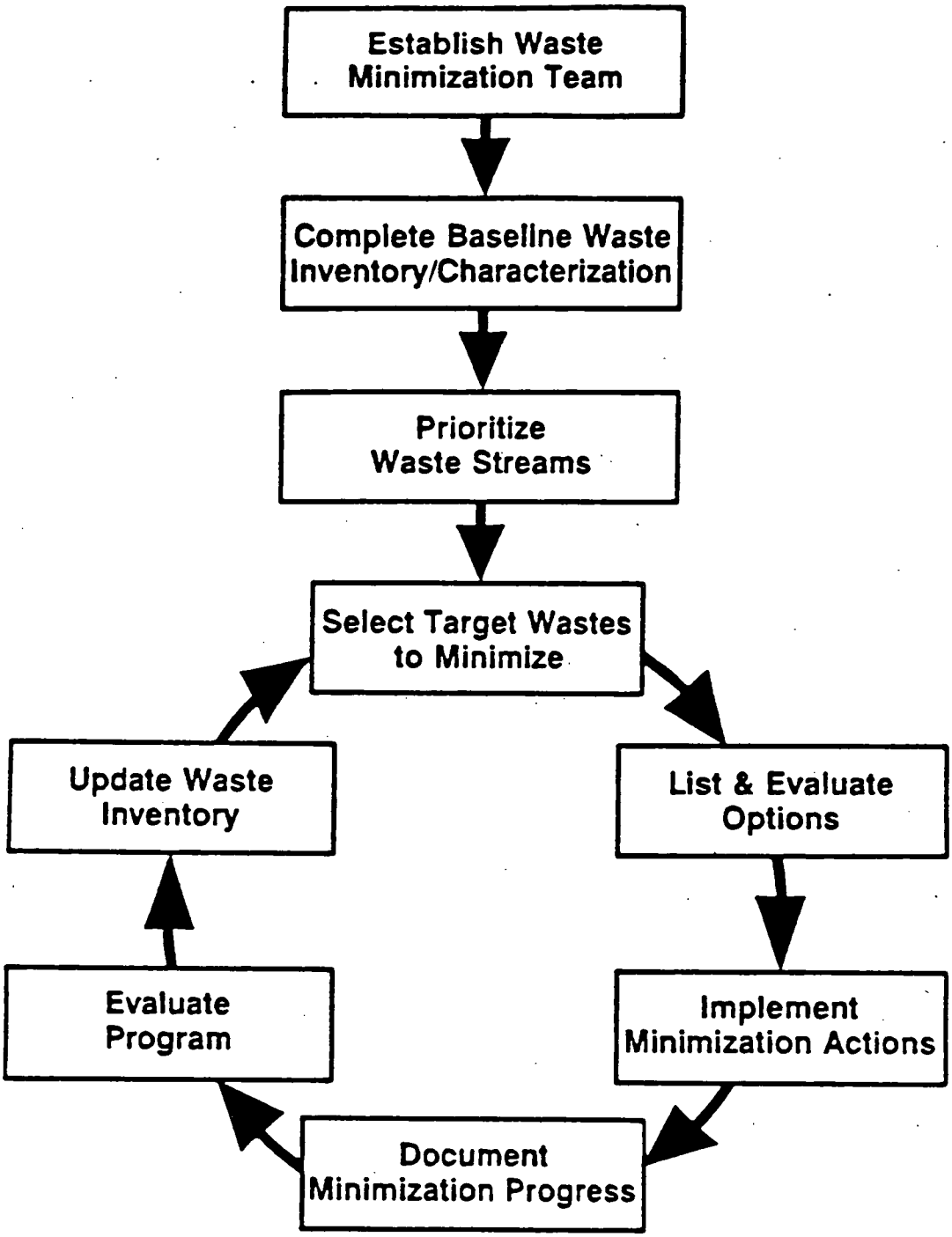


FIGURE 10
Waste Assessment Flow Diagram

6.4 Technology Transfer

Lessons learned about waste minimization technologies that have been implemented are collected by the Waste Minimization Team and disseminated to all departments at the FMPC and/or other DOE facilities. Success stories will be publicized by newsletters, bulletin boards, and pictorial essays. Publicizing success stories will trigger additional ideas and will benefit DOE if the public and local residents perceive the FMPC to be handling waste responsibly.

The waste minimization class presented at the DOE/Westinghouse School for Environmental Excellence will share FMPC site-specific accomplishments and goals to other DOE facilities.

Workshops and seminars will be utilized, as well as field trips to other DOE facilities to learn of waste minimization technology and techniques. This information will be shared with appropriate personnel by the Waste Minimization Team.

6.5 Program Evaluation

The Waste Minimization and Pollution Prevention Awareness Program will be continually evaluated and annual reviews will be documented. All major activities will be reviewed. The evaluation will document program achievements and identify potential areas for improvement. Achievements and milestones of the program will be a part of the contractor's performance evaluation and determination of award fees.

The following success criteria will be used to demonstrate the effectiveness of waste minimization efforts:

- Reduced generation rates of LLW, mixed waste and sanitary waste.
- Reduced waste management costs.
- Improved regulatory compliance.
- Reduced health risks.
- Increased process efficiency.
- Reduced accident risk.
- Improved public relations.

The Waste Minimization Team will address these criteria when evaluating the success of implemented actions to achieve waste volume or toxicity reductions.

A report will be made to the Site Manager and will contain current-year data, performance trends, forecasts, and measures used to gauge the performance of waste minimization activities. The evaluation report will be used to establish future waste minimization goals and program objectives. The report will also be used to determine changes to this plan.

7.0 TRAINING, AWARENESS, AND INCENTIVES

7.1 Employee Training Goals

One of the most important elements of the Waste Minimization and Pollution Prevention Awareness Program is training. Training activities will be integrated with an existing training program. The goal is to make each employee aware of waste generation, its impact on the site and the environment, and ways waste can be reduced and pollution prevented. The training program is to include waste minimization concepts that should be incorporated into every job aspect, so that it is routinely integrated into each phase of an operating procedure or design consideration.

A class has been developed on waste minimization techniques and presented at the DOE/Westinghouse School for Environmental Excellence.

7.2 Employee Awareness Goals

Initial FMPC employee awareness of the Waste Minimization and Pollution Prevention Awareness Program results from the WMCO management directive and policy statement. The primary responsibility for informing FMPC personnel on an ongoing basis of waste minimization activities, achievements, and concepts will be the Waste Minimization Team.

The Waste Minimization Team informs FMPC personnel of current and ongoing waste minimization accomplishments by use of pictorial essays, graphs that track progress, site bulletin boards, and site communication media (i.e., Focus, The Communicator, FMPC Update). This will be done on a monthly basis.

The Waste Minimization Team will also establish a waste minimization/pollution prevention slogan contest to heighten awareness of these issues. This will be done bi-monthly.

7.3 Employee Incentives, Awards, and Recognition

Incentives such as awards, plaques, and other forms of recognition shall be utilized to provide motivation, and to boost employee cooperation and participation. Meeting waste minimization goals will be a measure for evaluating the job performance of managers and employees through the performance management system and applicable performance objectives.

Waste minimization suggestion boxes will be used to elicit participation from employees, and awards will be given to employees whose waste minimization suggestions and/or ideas are efficient and cost effective.

Waste minimization information and graphs that track progress will be published or posted on a routine basis by the Waste Minimization Team.

8.0 REFERENCES

8.1 DOE Order 5820.2A, "Radioactive Waste Management"

8.2 DOE Order 5400.1, "General Environmental Protection Program"

8.3 DOE Order 5400.3, "Hazardous and Radioactive Mixed Waste Program"

8.4 EPA, "Code of Federal Regulations," Title 40, Subchapter J, "Superfund, Emergency Planning, and Community Right-to-Know Programs"

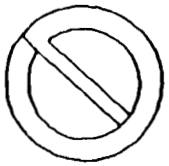
8.5 FMPC Roadmap, Volume 1 and 2; Predecisional Draft, January 31, 1991

8.6 FMPC Baseline Inventory Report, December 28, 1990

8.7 FMPC Waste Generation Prediction Report, February 20, 1991

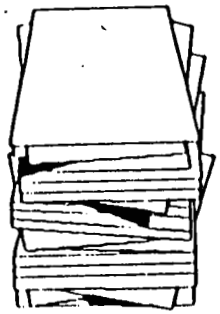
Figure 11

FMPC WASTE MINIMIZATION ACCOMPLISHMENTS



Source Elimination

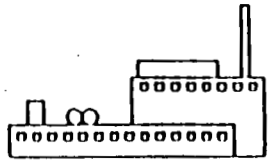
* Eliminated lead-based paint usage
* Initiated chemical product inventory reduction program
* Eliminated 1,1,1-trichloroethane use onsite, except paint shop



Recycle/Reuse

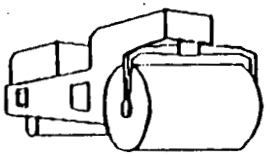
* Formed FMPC Total Quality Recycling Team
* Implemented paper and aluminum recycling program
* Began reuse of Xylene in laboratory

Figure 11 (Continued)
FMPC WASTE MINIMIZATION ACCOMPLISHMENTS



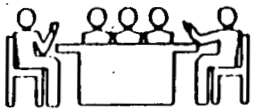
Segregation/Decontamination

* Segregated 13,500 cu. yds. of rubble/soil and office waste in 1990
* Decontaminated 485 tons of scrap steel



Volume Reduction

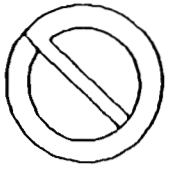
* Compacted 4,850 cu. yds. noncontaminated trash to 1,070 cu. yds.
* Compacted 2,300 cu. yds. contaminated dry, compactible trash to 770 cu. yds.
* Compacted 65,000 cu. ft. compactible refuse metal/scrap drums to 22,000 cu. ft.



Organizational

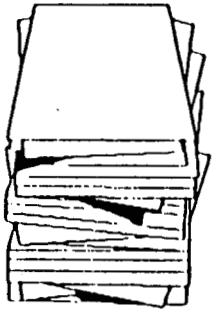
* Conducted Baseline Waste Inventory
* Predicted Waste Generation for FY-91, 92, 93, 94
* Formed Waste Minimization Team

Figure 12
FMPC WASTE MINIMIZATION GOALS



Source Elimination

* Conduct sampling and analysis on benzene contaminated oils from garage to classify as LLW
* Review and eliminate all infrequently used or duplicated chemicals onsite
* Substitute cloth "anti-Cs" for all paper "anti-Cs"



Recycle/Reuse

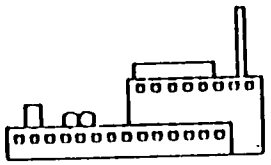
* Maintain office paper, computer paper, and aluminum can recycling efforts
* Initiate LasetJet cartridge recycling campaign
* Begin operation of distillation unit for spent solvent recovery in paint shop
* Initiate recycling of trichlorotrifluoroethane (Freon) in the lab
* Start operation of new Drum Reconditioning Facility

FIGURE 12
Waste Minimization Goals Bullet List
Page 41 of 43

Figure 12 (Continued)

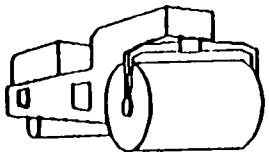
FMPC WASTE MINIMIZATION GOALS

Segregation/Decontamination



* Update laundry system to facilitate segregation
* Initiate PTA for process area compactible waste segregation
* Decontaminate 5,000 DEs (575 tons) of scrap metal per year

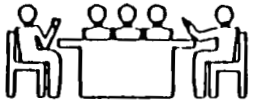
Volume Reduction



* Implement super compaction system in Plant 8
* Begin operation of the Plant 8 Rotex repackaging station
* Start operaation of the Plant 8 rotary kiln
* Evaluate feasibility of Trash and Scrap Monitoring Facility
* Initiate PTA for solids precipitation in Plant 8

Figure 12 (Continued)

FMPC WASTE MINIMIZATION GOALS



Organizational

* Integrate waste minimization/pollution prevention awareness into training courses
* Implement employee slogan contests
* Renew employee suggestion boxes and incentive programs
* Inform employees of accomplishments by use of bulletins, pictorial essays, and site media
* Perform ongoing waste assessments

SITE SERVICES PROCEDURE	SEGREGATION OF WOODEN PALLETS	SOP 20-607
		AREA: As Applicable
Authorization: R. L. Gardner, Facilities and Warehousing	Supersedes: 01-104, 6-23-87	Issue Date: 10-10-91

1.0 PURPOSE

The purpose of this procedure is to provide criteria to segregate wooden pallets into four categories; 1) reusable, 2) repairable, 3) nonrepairable, and 4) out-of-specification.

2.0 APPLICABILITY

This procedure applies to wooden pallet segregation at the FEMP site.

3.0 RESPONSIBILITIES

3.1 Supervision shall be responsible for the following:

3.1.1 Ensuring the specified IRS&T approved equipment is available.

3.1.2 Ensuring only trained personnel perform this operation per the criteria of this procedure.

3.1.3 Ensuring work and storage areas meet IRS&T criteria.

3.1.4 Contacting Industrial Hygiene or Radiological Safety to determine the appropriate respiratory protection for the process being performed.

3.1.5 Providing operators with the required respiratory protection.

3.2 The Radiological Safety Technician (RST) shall be responsible for the survey of wooden pallets to determine contamination levels and dose rates and establish radiological controls based upon survey results.

3.3 Operators are responsible for complying with this procedure.

4.0 DEFINITIONS

4.1 Designated Pallet Storage Location - An area identified by Site Services and approved by IRS&T Department which meets the physical and radiological requirements of activities associated with this SOP.

4.2 Out-Of-Specification Pallets - Pallets which do not meet the criteria of Engineering Specification OOX-5500-X-01254 and are not repairable.

4.3 Reusable Pallets - Pallets meeting FEMP standards per Engineering Specification OOX-5500-X-01254 (See Figure 1) and are in good working condition.

4.0 DEFINITIONS (cont.)

4.4 Nonrepairable Pallets - Pallets meeting FEMP standards per Engineering Specification OOX-5500-X-01254 with four or more inferior or damaged planks (See Figure 1).

4.5 Repairable Pallets - Pallets meeting FEMP standards per Engineering Specification OOX-5500-X-01254 with less than four inferior or damaged planks.

5.0 REFERENCES

None

6.0 INDUSTRIAL HEALTH AND SAFETY REQUIREMENTS

6.1 A defined safety system is not involved.

6.2 Safety glasses with side shields shall be worn unless other eye protection is specified by IRS&T.

6.3 Respiratory protection provided by the supervisor shall be worn when required by IRS&T.

6.4 Leather-palm gloves shall be worn when positioning pallets.

6.5 Lifting and movement of pallets shall be by mechanical means only.

6.6 HEPA type filter vacuum cleaners or an IRS&T approved vacuum system with a current DOP test label as specified by Industrial Hygiene properly affixed to vacuum shall be used for cleaning.

6.7 A Radiation Work Permit is required when pallets are in a contaminated area or when contamination is suspected on the pallets.

6.8 Any circumstance which could have resulted in an intake of radioactive materials by inhalation, ingestion or absorption shall immediately be reported to a supervisor. The supervisor shall immediately report the circumstance of possible radioactive materials intake to IRS&T Radiological Safety Section for evaluation. The involved personnel shall report to the Urine Sampling Station at the end of their shift to complete a Incident Investigation Report (IIR) (Form FMPC-ES&H-1458), and submit an incident urine sample. The involved personnel shall also report to the Urine Sampling Station at the start of their next shift to submit a followup urine sample. Employees are responsible for complying with additional requirements as specified by the Radiological Safety Section.

NOTE

NOTES precede the step to which they apply.

7.0 PROCEDURE

7.1 Classification of Empty Wood Pallets

7.1.1 Segregate pallets into reusable (See Figure 1), repairable, non-repairable, and out-of-specification classifications.

7.1.2 For non-repairable pallets, notify the RST to monitor pallets for dose rates and contamination levels.

7.1.2.1 If contamination is visible, attempt to remove by use of vacuum with HEPA filter.

7.1.2.2 Contact RST for a survey to determine the contamination has been reduced to an acceptable level.

NOTE

Waterproof ink shall be used to mark the identification on the index card.

7.1.3 Identify the pallets per Table 1 by marking the category on a 4" x 6" index card.

TABLE 1
PALLET CLASSIFICATION AND TRANSFER LOCATIONS

CLASSIFICATION	TRANSPORT LOCATION
Reusable	Remains at Generation point
Repairable	Carpenter Shop
Non-Repairable	Plant 1
Out-Of-Specification	Plant 1

7.1.4 Designate on the card the plant or specific area from which the pallet originates.

7.0 PROCEDURE (cont.)

7.1.5 Using a staple gun, affix the card to a 4 inch x 4 inch stringer facing outward on the pallet.

7.1.6 Notify Transportation to transport repairable, non-repairable, and out-of-specification pallets to designated locations per Table 1.

8.0 APPLICABLE FORMS

None

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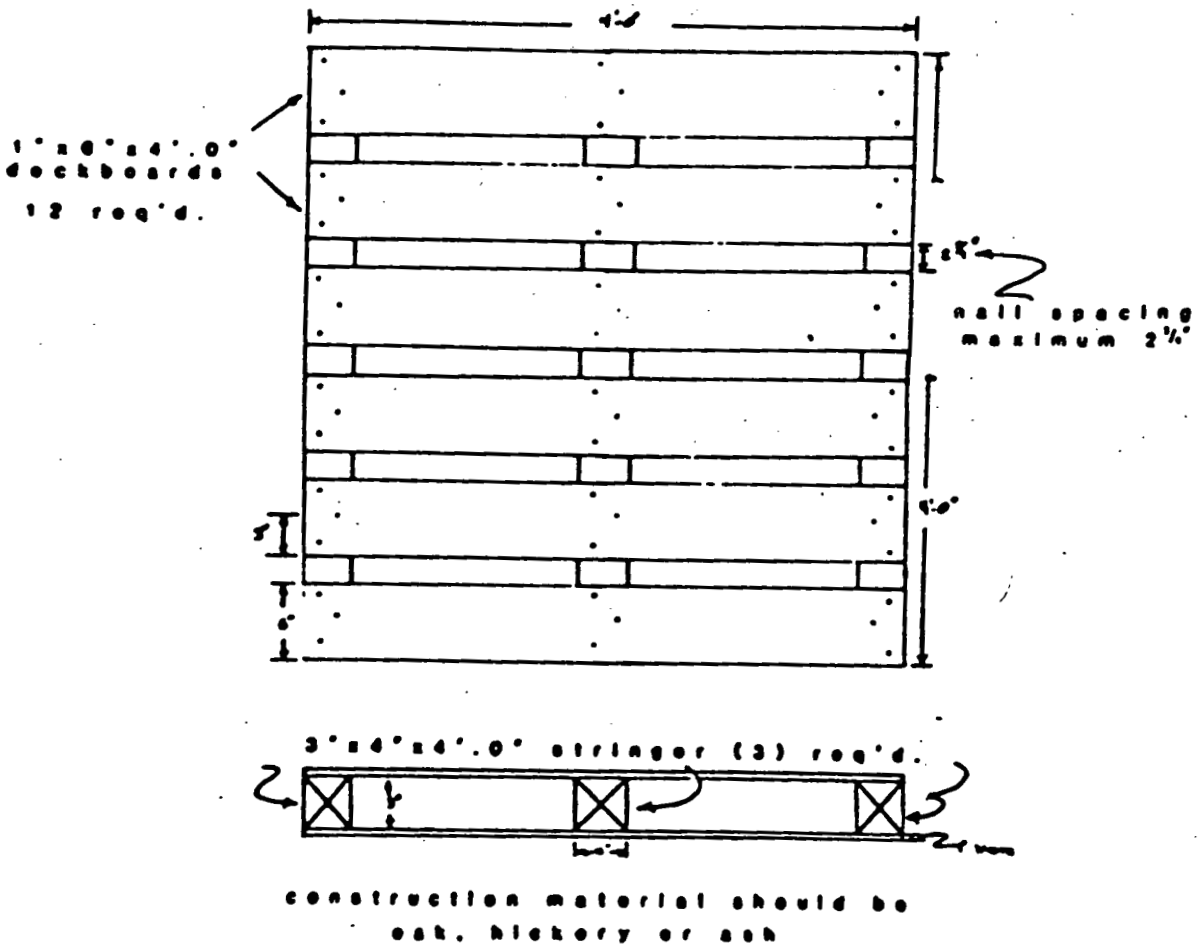

REUSABLE PALLETS
(FEMP Engineering Specification OOX-5500-X-01254)
Figure 1

R - MATERIAL REVISED, ADDED, OR DELETED.

RECORD OF ISSUE/REVISIONS

DATE	REV.NO	DESCRIPTION AND AUTHORITY
10-10-91	0	Procedure requirement for Segregation of Wooden Pallets per Request No. P89-167, initiated by K. Dunbar, supersedes SOP 01-104.

R - MATERIAL REVISED, ADDED, OR DELETED.