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**PROGRESS REPORT OPERABLE UNIT 3
PRODUCTION AREA OCTOBER 1992**

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Fernald Project

Remedial Investigation/ Feasibility Study

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PROGRESS REPORT

OCTOBER 1992

Operable Unit 3 PRODUCTION AREA

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Introduction

The Remedial Investigation/Feasibility Study (RI/FS) is the blueprint for cleanup at the U.S. Department of Energy's Fernald Environmental Management Project. The nature and extent of contamination at the Fernald site and surrounding areas is being thoroughly investigated so that appropriate remedial actions can be formulated and implemented.

The Fernald site has been divided into five sections, known as Operable Units, for environmental investigation and cleanup. The Operable Units were defined based on their location or the potential for similar technologies to be used in the ultimate cleanup.

During the course of the RI/FS effort, certain conditions are occasionally identified which call for more immediate action. These actions are called "Removal Actions" and are initiated when there is a need to accelerate cleanup activities to address releases or potential releases of hazardous substances. Removal Actions are coordinated with the U.S. EPA and the Ohio EPA.

Following is a progress report on Operable Unit 3 including its history, the current status of RI/FS activities, cleanup alternatives under consideration, and work that is being done to alleviate near-term concerns.

Background

Operable Unit 3, the former production area and other suspect areas, is one of the largest and most complex of the Fernald site Operable Units, largely due to the wide variety of former processing facilities located in this 136-acre study area. When the mission at the Fernald site was production of high-purity uranium metal for U.S. defense programs and the processing of thorium to support other DOE programs, large quantities of radioactive materials and hazardous chemicals were used in the various plants involved in the process. Operable Unit 3 focuses on cleanup of contamination in the former production area resulting from the 37-year production mission at the Fernald site. The primary contaminant is uranium, and the main focal points of cleanup are buildings, equipment, and support facilities.

RI/FS Activities

RI/FS Work Plan Addendum: The scope of Operable Unit 3 was modified by the Amended Consent Agreement to include all former process buildings, structures and equipment, and inventoried materials.

The RI/FS Work Plan Addendum for Operable Unit 3 was submitted to the U.S. EPA and the Ohio EPA on May 29, 1992, for review. U.S. EPA comments on the four-volume document were received in late July 1992.

The Work Plan Addendum includes an evaluation of available site characterization data and process knowledge, and identifies the need for additional data to evaluate risks and remedial alternatives. The Addendum also includes discussions on the various RI/FS tasks required, and schedules for conducting those activities.

The Work Plan Addendum also includes a recommended approach to be used in data collection, a proposed sampling and analysis plan, preliminary remedial action objectives, and remedial action alternatives. Planning for the implementation of the Work Plan is in progress. Approximately 24 months of field characterization work is anticipated for Operable Unit 3.

A revised approach document, designed to simplify the RI/FS and Work Plan for Operable Unit 3 based on U.S. EPA comments, was submitted to the U.S. EPA on September 14, 1992. The Operable Unit 3 RI/FS Work Plan Addendum is presently under revision. The revised Work Plan Addendum is on schedule for submittal to U.S. EPA by December 31, 1992.

Removal Actions

Plant 1 Pad Continuing Release (Removal Action No. 7): The purpose of this Removal Action is to protect surface soils and regional groundwater from continuing releases of hazardous materials resulting from waste management activities on the eight-acre Plant 1 storage pad. This Removal Action is being conducted in three phases.

Phase I, the implementation of run-on and run-off control measures and the installation of underground utilities, is complete.

Phase II work involves the installation of a new covered concrete storage pad (80,000 square feet) which is being built adjacent to the existing Plant 1 storage pad. Installation of the Phase II concrete pad is complete, and construction of two covered storage structures is 80 percent complete.

Remaining drums of low-level radioactive waste in outdoor storage on the Plant 1 Pad will be moved into the two new covered storage structures. These structures will be equipped with containment facilities for spill control, drainage, and stormwater runoff/run-on control. Phase II work is on schedule for completion by December 21, 1992.

Phase III involves activities to upgrade the existing Plant 1 storage pad, including the installation of a polyethylene liner and epoxy coating over the pad surface to minimize contaminant migration to the environment. Phase III is on schedule for completion by February 21, 1995.

Removal of Waste Inventories (Removal Action No. 9): This Removal Action involves the characterization, overpacking, and disposition of low-level radioactive waste materials. The removal of waste inventories is ongoing at the Fernald site.

The Fernald site received approval from the DOE-Nevada Operations Office to dispose of five general waste streams at the Nevada Test Site (NTS), including: process area scrap wastes (scrap metal and wood); construction and Removal Action waste (demolition debris); residues and thorium waste (refinery feed and oxides); and baled trash. The approval includes all backlog and currently-generated wastes at the Fernald site, which can be shipped to NTS for disposal contingent upon meeting all NTS Waste Acceptance Criteria.

Safe shipment of 1,621 drums of low-level thorium waste (oxides) to NTS was completed in September 1992. The DOE Fernald Field Office is presently seeking approval from the Nevada Operations Office to ship additional low-level thorium waste to NTS.

DOE met its goal of shipping 100,000 drums equivalents of low-level radioactive waste to NTS in Fiscal Year 1992 which ended September 30, 1992.

The current low-level radioactive waste shipping goal for Fiscal Year 1993 is 67,000 DEs. This includes currently-generated waste from construction and restoration activities, and characterized backlog waste.

Stabilization of Uranyl Nitrate Inventories (Removal Action No. 20): The processing of uranyl nitrate inventories was initiated in September 1992. As of early October 1992, 10,000 gallons had been processed. After the initial 20,000 gallon batch has been processed, the system will be shut down temporarily to allow for an evaluation of systems operability. Processing of uranyl nitrate inventories is expected to be completed in early 1993.

Uranyl nitrate is an intermediate product in the former uranium recovery process at the Fernald site. There are approximately 230,000 gallons of acidic uranyl nitrate stored in 21 tanks in or near the Plant 2/3 Refinery.

A 1991 inspection of the tanks revealed that small leaks had developed in the piping system associated with the tanks. This Removal Action is designed to process the uranyl nitrate to a stable form. The uranyl nitrate inventory will be neutralized and converted to a solid form which can be drummed and properly stored in warehouses pending final disposition.

Safe Shutdown (Removal Action No. 12): This Removal Action was initiated to ensure the safe and permanent shutdown of production facilities including the removal of uranium and other process/raw materials from equipment and lines in the former production area. Disposition of uranium products and recoverable residues is an integral part of Safe Shutdown activities.

Preliminary assessments of the scope of actions required to achieve a safe shutdown configuration of buildings and equipment have been completed for Plants 1, 2/3, 4, 8, and 9. Assessments for Plants 5, 6, and the Pilot Plant are nearing completion.

An annual update of Fernald site procedures to ensure that appropriate documentation of Safe Shutdown activities is entered into the Administrative Record was approved by the U.S. EPA on October 1, 1992.

Since the production mission ended in July 1989, 8.9 million pounds of uranium products have been transferred from the Fernald site under the Safe Shutdown program through September 30, 1992.

Plant 1 Ore Silos (Removal Action No. 13): This Removal Action will involve the dismantling of the Plant 1 Ore Silos and their support structures. Deteriorated valves caused the silos to leak material onto a concrete pad in February 1991. The material, known as cold raffinate, is the waste residue from the processing of uranium ore after uranium is removed. Remaining material in the silos will be removed, containerized and placed in safe storage pending final disposition. All 14 silos and support structures will be dismantled and demolished under this Removal Action.

The contract to perform the work was awarded through competitive bidding in September 1992. Field activities were initiated October 18, 1992. This Removal Action is on schedule for completion by December 18, 1994.

Contaminated Soils Adjacent to Sewage Treatment Plant Incinerator (Removal Action No. 14): The scope of this Removal Action will include the isolation or removal and disposition of contaminated soils with elevated levels of uranium in the vicinity of

an out-of-service solid waste incinerator at the sewage treatment plant. The project is designed to mitigate the potential for contaminant migration. Activities will include characterization, removal, containerization, storage and disposal of materials.

The first phase of the Removal Action (characterization) discovered a larger area of contamination than previous sampling had indicated. Due to the larger area of contamination, soil excavation plans were re-evaluated and a revised work plan to address the larger area of contamination was submitted to the U.S. EPA for review.

Excavation of contaminated soils began September 9, 1992. Areas excavated were marked in the field and storage containers to accept the contaminated soils were put in place. Excavation of contaminated soils and post-excavation sampling activities were completed October 16, 1992. A total of 187 white metal boxes were used to accept contaminated soils.

Scrap Metal Piles (Removal Action No. 15): This Removal Action will address the stabilization and disposition of low-level radioactive waste scrap metal currently stockpiled outdoors at the Fernald site. The project is designed to eliminate the potential threat of material releases to the environment due to wind or rain from 1,300 tons of scrap copper and about 3,000 tons of recoverable scrap metals.

Containerization of the scrap copper pile is on schedule for completion by November 31, 1992. A vendor is expected to be selected through competitive bidding this fall to process the scrap copper pile. The contract will emphasize recycling or other beneficial reuse.

Scientific Ecology Group, Inc. (SEG), of Oak Ridge, Tenn., was awarded a contract for the final disposition of 2,210 tons of ferrous scrap metal. Most of the 2,210 tons will be reused. Field activities and containerization of the scrap metal piles is expected to begin in November 1992, pending U.S. EPA approval of SEG's project plan.

Non-recoverable scrap metal at the Fernald site is presently being packaged into appropriate containers and shipped off site for disposal under Removal Action No. 9 (Removal of Waste Inventories).

The DOE will be accepting public comments on this Removal Action during the month of November 1992. The work plan is available for review in the Public Environmental Information Center.

Improved Storage of Soil and Debris (Removal Action No. 17): This Removal Action provides for the improved storage and management of contaminated soil and debris generated as a result of performing cleanup at Fernald. Activities under this Removal Action will include characterization, interim storage, and management of contaminated soils and debris until their final remediation under

Operable Unit 3.

The U.S. EPA disapproved the original work plan on July 29, 1992. U.S. EPA comments were incorporated into a revised work plan which was submitted to U.S. EPA on August 28, 1992, for review. U.S. EPA granted conditional approval of the revised work plan on September 30, 1992.

Detailed design of above-ground structures and facilities has been initiated to support this Removal Action. Tension Support Structures, similar to those currently being used to provide indoor storage for drummed waste on the Fernald site's Plant 1 Pad, will be used to provide improved storage of soil and debris and mitigate the potential spread of contamination.

The DOE will be accepting public comments on this Removal Action during the month of November 1992. The work plan is available for review in the Public Environmental Information Center.

Plant 7 Dismantling (Removal Action No. 19): The work plan for this Removal Action is due to the U.S. EPA by April 20, 1993. The characterization plan is currently in progress. Plant 7 was originally built to convert uranium hexafluoride (UF₆) to uranium tetrafluoride (UF₄). Plant 7 has been idle since the mid-1950s. All process equipment was removed from Plant 7 in the late 1950s. Plant 7 is presently being used for storage of empty cans and drums. Activities under this Removal Action will involve decontamination and dismantling of the building.

Pilot Plant Sump (Removal Action No. 24): This Removal Action was initiated to address contaminated liquids and sludges remaining in an out-of-service sump at the Fernald site's Pilot Plant. The below-grade sump is a stainless steel cylinder approximately two feet in diameter and 10 feet deep. The sump was installed to remove liquids from the floor drains of the Pilot Plant during the renovation of the Pilot Plant in 1969. Analyses of the sludges and liquids from the sump show high concentrations of metals (lead, copper, chromium, and nickel), as well as thorium and volatile organic compounds.

An initial pump-out of accumulated liquid (185 gallons) occurred on July 24, 1992. A second pump-out (175 gallons) took place on September 2, 1992. Pumping will continue on a monthly basis until the removal of the sump is initiated. Under this Removal Action, the stainless steel sump will be removed and its associated piping will be disconnected. The drain piping integrity will be checked and the drain system plugged. Adjacent soils will be cleaned up as required.

The work plan for this Removal Action was submitted to the U.S. EPA on July 24, 1992. An integrated work plan, which addresses both U.S. EPA comments and Ohio EPA's concerns regarding the management of hazardous wastes, was submitted to both EPAs in October 1992 for review.

The DOE will be accepting public comments on

this Removal Action during the month of November 1992. The work plan is available for review in the Public Environmental Information Center.

Nitric Acid Tank Car and Area (Removal Action No. 25): This Removal Action was initiated to remove the residual contents of a Nitric Acid Railroad Tank Car, decontaminate and dispose of the tank car itself, and address potentially contaminated surrounding soils related to the tank car. The high-grade stainless steel tank car stored nitric acid from 1952 until 1989 for use in the former production process at Fernald. The tank car has a capacity of 100,000 pounds and now contains approximately 100 gallons of dilute nitric acid. The work plan for this Removal Action was submitted to the U.S. EPA in October 1992 for review. The DOE will be accepting public comments on this Removal Action during the month of November 1992. The work plan is available for review in the Public Environmental Information Center.

Asbestos Removals (Asbestos Program) (Removal Action No. 26): This Removal Action documents ongoing asbestos abatement activities at the FEMP to mitigate the potential for contaminant release and migration. Abatement activities within the existing Asbestos Program include repairs, encasement, encapsulation or removal of asbestos-bearing materials which exist in many buildings on the Fernald site. A proposed work procedures document was submitted to the U.S. EPA on May 19, 1992, for review and approval. A revised work procedures document incorporating U.S. EPA comments was submitted to U.S. EPA on August 10, 1992. U.S. EPA approved the revised work procedures document in September 1992. Field activities in support of asbestos identification and abatement are in progress.

Management of Contaminated Structures at the FEMP (Removal Action No. 27): This Removal Action was initiated to provide a mechanism to perform accelerated cleanup actions to mitigate any potential threat to human health and the environment associated with select contaminated structures at Fernald. Characterization data are being gathered and required work activities are being formulated in support of the Removal Action. An Engineering Evaluation/Cost Analysis (EE/CA) is being prepared to identify the preferred Removal Action alternative for managing identified contaminated structures at Fernald pending implementation of final remedial actions under Operable Unit 3. The EE/CA is on schedule for submittal to the U.S. EPA by December 15, 1992.

Cleanup Alternatives

Several cleanup alternatives have been identified for Operable Unit 3. All of these options include regular maintenance and monitoring. Much of the cleanup work involves the disposal of inventoried waste materials in either an on-site or an off-site disposal facility, removal and decontamination of buildings and equipment, and disposal of remaining contaminated materials in approved, engineered facilities either at the Fernald site or off site. Implicit within all Operable Unit 3 alternatives is an emphasis on the recycling and recovery of building materials and equipment to minimize waste disposal requirements. More definitive descriptions of alternatives will be provided in subsequent reports, pending U.S. EPA approval of the Operable Unit 3 Work Plan Addendum.

More information about Operable Unit 3 is available in the Public Environmental Information Center (PEIC), where Fernald Project cleanup documents are kept in the Administrative Record. The PEIC is located in the JAMTEK building, 10845 Hamilton-Cleves Highway, Harrison, Ohio, 45030. The telephone number is (513) 738-0164.