

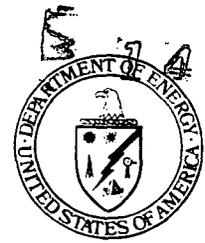


4-201.4

Department of Energy

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MAY 06 1998

DOE-0702-98

Mr. Gene Jablonowski, Remedial Project Manager
U.S. Environmental Protection Agency
Region V, SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

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

Dear Mr. Jablonowski and Mr. Schneider:

REMEDIAL DESIGN WORK PLAN FOR OPERABLE UNIT 4 SILO 3 REMEDIAL ACTION

Enclosed is the Remedial Design Work Plan (RDWP) for the Operable Unit 4 (OU4) Silo 3 Remedial Action. The content of the enclosed RDWP is consistent with recent discussions between the Department of Energy (DOE), Fluor Daniel Fernald (FDF), U.S. Environmental Protection Agency (U.S. EPA) and Ohio Environmental Protection Agency (OEPA).

Submittal of the enclosed RDWP meets the requirements of the July 1997 Dispute Settlement Agreement for submittal of a replacement RDWP for Silo 3 60 days after finalizing the Silo 3 Explanation of Significant Differences (ESD), which was approved on March 27, 1998.

If you have any questions, please contact Nina Akgündüz at (513) 648-3110.

Sincerely,

Johnny W. Reising
Fernald Remedial Action
Project Manager

FEMP:Akgündüz

Enclosure: As Stated

000001

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**REMEDIAL DESIGN WORK PLAN
OPERABLE UNIT 4/
SILO 3 PROJECT**

40400-WP-0001, REV. 0
APRIL 1998

**FERNALD ENVIRONMENTAL
MANAGEMENT PROJECT
FERNALD, OHIO**

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1.0 INTRODUCTION

1.1 Scope and Purpose of Operable Unit 4 Silo 3 Remedial Design Work Plan

This Remedial Design Work Plan (RDWP) documents the strategy for detailed planning and design of the selected remedy to treat Operable Unit (OU) 4 Silo 3 material. This RDWP describes the process for selecting a contractor for retrieval and treatment of the Silo 3 material and the process and schedule for planning, designing, and implementing the selected remedy.

This RDWP establishes a milestone for award of the Silo 3 remediation contract for implementation of the Silo 3 remedy. After contract award, the Department of Energy-Fernald Environmental Management Project (DOE-FEMP) will submit a schedule identifying milestones for submittal of the Remedial Design Package and Remedial Action Work Plan (RAWP) to the United States Environmental Protection Agency (U.S. EPA) and Ohio Environmental Protection Agency (OEPA). Designed in accordance with Remedial Design (RD) submittals, the RAWP will provide milestones for implementation of the remedy.

The treatment of Silo 3 material will be conducted by the selected contractor in accordance with the cleanup objectives and direction, as required in the "Final Explanation of Significant Differences (ESD) for Operable Unit 4 Silo 3 Remedial Action," March 27, 1998. Only the selected remedy for retrieval, treatment, and disposal of Silo 3 material, as approved in the ESD is addressed in this RDWP. Implementation of other portions of the OU4 remedy addressed in the original OU4 Record of Decision (ROD), as amended, and RDWP will be documented in other planning documents.

ACRONYM LIST

ARAR	Applicable or Relevant and Appropriate Requirement
DOE-FEMP	Department of Energy - Fernald Environmental Management Project
ESD	Explanation of Significant Differences
FDF	Fluor Daniel Fernald
FS/PP	Feasibility Study/Proposed Plan
FT&PP	Final Technical and Price Proposals
IRT	Independent Review Team
NTP	Notice to Proceed
NTS	Nevada Test Site
OEPA	Ohio Environmental Protection Agency
OU	Operable Unit
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDWP	Remedial Design Work Plan
RFP	Request for Proposal
RI	Remedial Investigation
ROD	Record of Decision
TBC	To Be Considered
TCLP	Toxicity Characteristic Leaching Procedure
U.S. EPA	United States Environmental Protection Agency
VITPP	Vitrification Pilot Plant
WAC	Waste Acceptance Criteria

1.2 Background

The U.S. EPA approved and signed the "Final ROD for Remedial Actions at Operable Unit 4" on December 7, 1994. The selected remedy consisted of the following components:

- Removal of contents from the Silos 1, 2, and 3 structures, on-site vitrification of the silo materials, and transportation and disposal at the DOE's Nevada Test Site (NTS);
- Decontamination and demolition of all silo structures and the vitrification facility in accordance with the approved OU3 ROD; and
- Excavation and treatment of contaminated soils, and treatment of perched water encountered during remedial action, in accordance with the approved OU5 ROD.

The initial OU4 RDWP was approved by the U.S. EPA on June 15, 1995. As part of the strategy outlined in the RDWP, the DOE-FEMP initiated several advanced pilot-scale treatability studies both on-site and in partnership with the academic community. Vitrification Pilot Plant (VITPP) Phases I and II Treatability Study Programs were integrated directly into the OU4 Remedial Design/Remedial Action (RD/RA) program to collect quantitative performance data to support the application of vitrification technology for the remediation of silo materials. Phase I VITPP testing activities began June 19, 1996, with initiation of the first of four campaigns. On December 26, 1996, VITPP operations were suspended during the final campaign of Phase I.

In response to schedule delays and the need to re-assess the technical path forward for remediation of the material in Silos 1, 2, and 3, the DOE-FEMP requested from U.S. EPA an extension of certain RD/RA milestones. The U.S. EPA denied the request for extension and agreed to a period of informal dispute resolution to allow the DOE-FEMP, in consultation with the U.S. EPA, the OEPA, and stakeholders, to re-assess the path

forward. During this informal dispute resolution, the DOE-FEMP, with input from the Independent Review Team (IRT), U.S. EPA, OEPA, and stakeholders, evaluated the results of the VITPP program and the technical and schedule impacts of pursuing alternative approaches to OU4 remediation. These evaluations culminated in a decision not to resume the VITPP for additional Phase I or Phase II testing. These same evaluations supported a position, that remediation of Silo 3 material be implemented separately from Silo 1 and 2 material, and that an alternate remedy should be considered for treatment and disposal of Silo 3 material. The July 22, 1997, "Agreement Resolving Dispute Concerning Denial of Request for Extension of Time for Certain Operable Unit 4 Milestones," specified that the change in remedy for Silo 3 material should be documented in an ESD. The Dispute Settlement requires that a Remedial Design Work Plan, specifically for the Silo 3 Project, be submitted to U.S. EPA for review and approval within 60 days of U.S. EPA signing the ESD. As noted previously, U.S. EPA signed the Final ESD for OU4 Silo 3 Remedial Action on March 27, 1998.

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2.0 REMEDIAL DESIGN SCOPE AND STRATEGY

2.1 Scope of Silo 3 Remedial Action

The selected remedy for Silo 3 material, approved in the ESD, consists of:

- Treatment, using either chemical stabilization/solidification or a polymer-based encapsulation process, to stabilize characteristic metals to meet Resource Conservation and Recovery Act (RCRA) Toxicity Characteristic Leaching Procedure (TCLP) limits and attain disposal facility waste acceptance criteria (WAC); and
- Off-site disposal at either the Nevada Test Site (NTS) or an appropriately-permitted commercial disposal facility.

The ESD allows the treatment portion of the selected remedy to be accomplished through either on-site treatment at the FEMP to meet the disposal facility WAC or off-site treatment. Off-site treatment would require pretreatment on-site to reduce dispersibility of thorium-bearing particulates and render the material acceptable for transportation. The material would then be transported to an appropriately permitted off-site facility for treatment using either chemical stabilization/solidification or a polymer-based encapsulation process to meet the disposal facility WAC.

The Silo 3 structure and soil in the vicinity of Silo 3 will be remediated under the OU3 and OU5 RODs, respectively, and are not addressed in this RDWP.

2.2 Remedial Action Strategy

The remedy for Silo 3 material will be accomplished under a Firm-Fixed Price/Firm Fixed Unit Price contract utilizing a contractor having demonstrated experience in the proposed waste stabilization technology. A Request for Proposal (RFP) will be issued to potential

contractors, with issuance expected in early summer 1998.

As specified in the ESD, potential contractors shall submit a proposal based upon treating Silo 3 material either by: (1) chemical stabilization/solidification technology, which involves mixing waste with inorganic chemical additive formulations to chemically stabilize contaminants into a nonleachable form, or (2) polymer-based micro encapsulation technology, which is a thermal process that physically binds the constituents of concern in a polymer-based matrix.

The RFP has been written to take maximum advantage of the experience of the commercial sector by allowing qualified companies to submit proposals, whether for on-site treatment at the FEMP or for treatment at an off-site facility. Potential contractors who offer proposals for off-site treatment of Silo 3 material must also integrate the work scope for off-site treatment requirements and meeting the disposal facility WAC.

Contractors may propose construction of a temporary treatment facility, use of existing mobile facilities, or off-site facilities. The RFP evaluation criteria take into consideration approaches that maximize the use of existing equipment and facilities and minimize the generation of waste streams.

Fluor Daniel Fernald (FDF) will evaluate responsive Technical Proposals and establish two technical competitive ranges of contractors: one range for contractors offering on-site treatment proposals and one range for contractors offering off-site treatment proposals. Contractors in both competitive ranges will be invited to submit Final Technical and Price Proposals (FT&PP). Following receipt and evaluation by FDF of the FT&PPs, FDF will select the contractor offering the overall best value, with technical and price factors considered. Portions of the technical proposal of the successful contractor may be incorporated into the resultant contract, and shall become part of the technical baseline for compliance with the contractual requirements.

The services of the contractor shall include:

- Interface with appropriate FEMP personnel.
- Performance of the work in a safe and regulatorily-compliant manner.
- Design, construction, start-up, operation, maintenance, shutdown and dismantlement of treatment facilities;
- Removal, treatment, packaging, and interim staging of the Silo 3 material; and
- Gross decontamination of the Silo 3 interior.

FDF will be responsible for the shipment of the treated and packaged waste to the final disposal facility upon verification by FDF, that the treated waste form meets the disposal facility WAC. FDF will also dispose of contaminated equipment not removed by the contractor at the completion of Silo 3 remediation activities.

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3.0 SILO 3 REMEDIAL DESIGN IMPLEMENTATION

3.1 Remedial Design Process

The Silo 3 Project is separated into five major work phases:

Remedial Design Phase: Premobilization Phase
Preoperational Phase

Remedial Action Phase: Operational Phase
Facility Shutdown and Dismantlement Phase
Demobilization Phase

The design of the treatment facility will be conducted during the premobilization phase. During this phase, the contractor shall perform the calculations, engineering, and design activities necessary to complete the development of the process and support facilities to remove and treat Silo 3 material. The contractor shall perform these activities in accordance with the contractor's Safety Basis, the Engineering Management Plan, and the Configuration Management Plan. The contractor shall provide FDF with the deliverables listed in the RFP to ensure that work is performed in a safe and regulatorily-compliant manner.

FDF will oversee the contractor's activities under the contract, to ensure that the overall project is implemented in accordance with the OU4 ROD, as modified by the ESD, and in accordance with DOE Orders and other requirements specified in the RFP. FDF will also be responsible for disposing of the treated waste, treating the wastewater generated on-site, and disposing of contaminated debris from project dismantlement activities.

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3.2 Remedial Design Submittals

3.2.1 Receipt of Contractor Schedule

After FDF awards the contract, the selected contractor shall provide a schedule identifying proposed submittal dates for the required design deliverables to FDF for review and acceptance. FDF will receive the schedule after giving the contractor the Notice to Proceed (NTP).

As the contractor submits the design deliverables, FDF will review the documentation to ensure that the requirements, as set forth in the RFP, have been incorporated into the design and planned operations.

Throughout the process of receiving design deliverables, FDF will maintain the involvement of the U.S. EPA, OEPA, and stakeholders.

3.2.2 Remedial Design Package

The contractor will submit a Remedial Design Package, which will be submitted for U.S. EPA and OEPA review, comment, and approval. Approval of the Remedial Design Package by the EPAs will be required prior to FDF authorizing the contractor to mobilize at the FEMP and begin assembling its treatment facility. This Remedial Design Package will provide the EPAs with an understanding of the design, retrieval operation, and controls necessary in the contractor's treatment facility to ensure protection of the workers, public health, safety, and the environment.

The Remedial Design Package will contain comprehensive documents prepared by the contractor pursuant to the contract submittal register and substantive information based on detailed engineering, design, and proposed operations. The Remedial Design Package will include, at a minimum, the following information:

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- Design documentation;
 - Silo 3 retrieval technology description
 - Process description
 - Process flow diagram
 - Heat and material balance
 - General arrangement drawing
 - Design specifications

- Applicable or Relevant and Appropriate Requirements (ARAR) compliance strategy and substantive permit requirements (a "permitting crosswalk");

- Description of site preparation activities including methods and materials used to control erosion, dust, and stormwater and minimize the impact of activities on the environment;

- Detailed description of process operations;

- Process Control Plan;

- Description of Health and Safety controls for operations;

- Contingency Plan;

- Sampling and Analysis Plan;

- Operational Environmental Control Plan (which includes waste management); and

- Operational description of FDF's responsibility for transportation and disposal of treated waste.

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3.2.3 Remedial Action Work Plan

Following approval of the Remedial Design Package by the EPAs, a RAWP will be prepared and submitted to the EPAs. This plan will specify the implementation strategy and the milestones for the Remedial Action phase of the Silo 3 Project.

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4.0 SCHEDULE FOR THE SILO 3 REMEDIAL ACTION

The design for the Silo 3 Remedial Action will take place according to the milestones listed in Table 4-1. An initial deliverable received from the contractor will be a detailed schedule for submittal of the specified design deliverables and other documents to FDF for review and acceptance. Based on this schedule, dates will be established, and the Remedial Design Deliverables Schedule submitted to U.S. EPA for approval, for subsequent remedial design milestones.

TABLE 4-1 MILESTONES FOR THE SILO 3 REMEDIAL DESIGN	
Milestone	Date
Award of Contract	6/24/99
Submit Remedial Design Deliverables Schedule to U.S. EPA	90 days after award of Contract
Submittal of draft Remedial Design Package for Silo 3 Stabilization to U.S. EPA	To be specified in the Remedial Design Deliverables Schedule.
Submittal of draft Silo 3 Remedial Action Work Plan to U.S. EPA	To be specified in the Remedial Design Deliverables Schedule.