

research and advanced concepts pertinent to fossil resource conversion and utilization limited to the nine (9) technical topics listed below.

Topic 1—Advanced Environmental Control Technology for Coal

Grant applications in support of Advanced Environmental Control Technology for Coal are only solicited for the following subtopics:

Coal Preparation
Hot Gas Stream Cleanup
Advanced High Efficiency Emissions Control
Waste Management

Topic 2—Advanced Coal Utilization

Grant applications in support of Advanced Coal Utilization are only solicited for the following subtopics:

Advanced Coal Combustion Systems
Fluid Bed Combustion (FBC)

Topic 3—Coal Liquefaction Technology

Grant applications in support of Coal Liquefaction Technology are only solicited for the following subtopics:

Advanced Concepts for Conversion of Coal to Liquids
Advanced Concepts for Conversion of Syngas to Liquids
Coal-Oil Coprocessing
Advanced Catalysts

Topic 4—Biotechnology for Fossil Energy

Grant applications in support of Biotechnology for Fossil Energy are only solicited for the following subtopics:

Beneficiation of Coal Resources
Conversion of Fossil Energy Resources
Bioreactors and Bioprocess Efficiency
Enhanced Oil and Gas Recovery

Topic 5—Advanced Recovery of Oil

Grant applications in support of Advanced Recovery of Oil are only solicited for the following subtopics:

Recovery of Light Oil
Recovery of Heavy Oil
Oil-Field Geoscience

Topic 6—Advanced Technology for the Recovery of Natural Gas

Grant applications in support of Advanced Technology for the Recovery of Natural Gas are only solicited for the following subtopics:

Advanced Geotechnology in Production Applications
Advanced Concepts for Natural Gas Conversion to Liquids

Topic 7—Advanced Environmental Considerations in the Recovery and Processing of Oil and Natural Gas

Grant applications in support of Advanced Environmental

Considerations in the Recovery and Processing of Oil and Natural Gas are only solicited for innovative methods and concepts that allow more efficient, effective, and economical reduction of environmental risk from the processing and primary, secondary, and enhanced extraction of oil and natural gas. Research relating to open oil spill cleanup technologies will not be considered.

Topic 8—Heavy Oil Upgrading and Processing

Grant applications in support of Heavy Oil Upgrading and Processing, are sought for the following subtopics:

(a) *Improved Understanding of the Chemistry and the Thermodynamics of Adding Hydrogen to Heavy Feedstocks;*
(b) *Improved Understanding of the Chemistry and the Thermodynamics of the Removal of the Contaminants, i.e., S, N, O, Metals, etc., from Heavy Feedstocks;*

(c) *Development of New and Less Expensive Means for Producing Hydrogen from Feedstocks other than Light Hydro-carbons which are Excellent Fuels as is;*

(d) *Development of New and Less Expensive Contaminant Removal Processes for Heavy Oils along with Environmentally Acceptable Means of Disposing of the Contaminants when Removed;*

(e) *Development of New Knowledge to be used to Improve Catalytic Cracking and Hydrocracking Catalysts and Process; and*

(f) *Development of the Knowledge, Catalysts and Processes Necessary to Eliminate the Production of Petroleum Coke or the Ability to Liquefy it so that it can be Recycled to the Refinery.*

Topic 9—Faculty/Student Exploratory Grants

DOE is seeking grant applications from HBCU faculty and/or students for a supportable basic premise on any one of the subtopics covered under the above eight (8) technical topics. DOE will provide "seed" grants to the selected HBCU(s) to enable the faculty and/or student researcher(s) to conduct the proposed exploratory research and further develop the stated premise. This is the *only* topic (Topic nine (9)) under this Program Solicitation that does not require initial private sector collaboration for an application to be considered for selection.

Awards: DOE anticipates issuing financial assistance (grants) for each project. DOE reserves the right to support or not support any or all applications received in whole or in part, and to determine how many

awards may be made through the solicitation subject to funds available in this fiscal year. The limitation on the maximum DOE funding for each selected grant to be awarded under this Program Solicitation is as follows:

	Maximum award
Topics 1–8:	
To 12 months grant duration	\$80,000
13–24 months grant duration	140,000
25–60 months grant duration	200,000
Topic 9:	
To 12 months grant duration	10,000

Approximately one million dollars is planned for this solicitation. The total should provide support for approximately four to eight R&D proposal selections (Topics 1–8), and approximately two to six facility/student exploratory proposal selection (Topic 9).

Solicitation Release Date: The Program Solicitation is expected to be ready for mailing on January 12, 1995. Applications must be prepared and submitted in accordance with the instructions and forms in the Program Solicitation. To be eligible, applications must be received by the Department of Energy by the closing date stated in the solicitation.

Debra E. Ball,

Contracting Officer, Acquisition and Assistance Division.

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Record of Decision for Remedial Actions at Operable Unit 4, Fernald Environmental Management Project, Fernald, Ohio

AGENCY: U.S. Department of Energy.

ACTION: Notice.

SUMMARY: The Record of Decision (ROD) for Operable Unit 4 (OU4) at the Fernald Environmental Management Project was signed by the Department of Energy on November 3, 1994, and was approved by the Environmental Protection Agency (EPA) Region V on December 7, 1994, with concurrence of the Ohio Environmental Protection Agency. This decision was made in accordance with the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 9601 *et seq.* For OU4 at Fernald, the Department has chosen to complete an integrated CERCLA/National Environmental Policy Act (NEPA) process. To support the selection of a remedy for OU4, which includes K-65 silo wastes, the

Department prepared an integrated Feasibility Study/Proposed Plan-Environmental Impact Statement (FS/PP-EIS) (DOE/EIS-0195). Subsequent to the public involvement opportunities on the draft and final FS/PP-EIS documents, and after having considered the comments received, a remedy was selected in a joint CERCLA/NEPA ROD. The Department is publishing this Declaration Statement of the joint CERCLA/NEPA ROD, as originally signed in November 1994, as specified in the Department NEPA regulations [10 CFR 1021.315(c)].

FOR FURTHER INFORMATION CONTACT:

For further information on the CERCLA/NEPA ROD at Fernald, contact: Mr. Gary Stegner, Public Affairs Specialist, Fernald Area Office, U.S. Department of Energy, P.O. Box 538705, Cincinnati, Ohio 45253-8705, (513) 648-3014.

For further information on the DOE NEPA process, contact: Ms. Carol M. Borgstrom, Director, Office of NEPA Oversight, EH-25, U.S. Department of Energy, 1000 Independence Ave, SW., Washington, D.C. 20585, (202) 586-4600 or (800) 472-2756.

Issued in Washington, D.C., this 30th day of December, 1994.

Clyde Frank,

Acting Assistant Secretary for Environmental Management.

SUPPLEMENTARY INFORMATION: The following is the *verbatim* Declaration Statement of the joint CERCLA/NEPA ROD for Remedial Actions at OU4 at Fernald, Ohio.

Site Name and Location

Fernald Environmental Management Project (FEMP) Site—Operable Unit 4, Fernald, Hamilton County, Ohio

Statement of Basis and Purpose

This decision document presents the selected remedial action for Operable Unit 4 of the Fernald Site in Fernald, Ohio. This remedial action was selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable 40 Code of Federal Regulations (CFR) Part 300, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

For Operable Unit 4 at the FEMP, DOE has chosen to complete an integrated CERCLA/NEPA process. This decision was based on the longstanding interest on the part of local stakeholders to prepare an Environmental Impact Statement (EIS) on the restoration

activities at the FEMP and on the recognition that the draft document was issued and public comments received. Therefore, this single document is intended to serve as DOE's ROD for Operable Unit 4 under both CERCLA and NEPA; however, it is not the intent of the DOE to make a statement on the legal applicability of NEPA to CERCLA actions.

The decision presented herein is based on the information available in the administrative record for Operable Unit 4 and maintained in accordance with CERCLA. The major documents prepared through the CERCLA process include the Remedial Investigation (RI), the Feasibility Study (FS), and the Proposed Plan (PP) for Operable Unit 4. The FS and the PP also comprised DOE's draft EIS and were made available for public review and comment. This decision is also based on the public hearing held on March 21, 1994, in Harrison, Ohio, and the public meeting held on May 11, 1994, in Las Vegas, Nevada following the issuance of the Feasibility Study/Proposed Plan-Draft Environmental Impact Statement (FS/PP-DEIS). DOE has considered all comments received during the public comment period on the FS/PP-DEIS and following issuance of the final EIS in the preparation of this ROD.

The State of Ohio concurs with the remedy and the applicable or relevant and appropriate requirements (ARARs) put forth in this ROD for Operable Unit 4.

Assessment of the Site

Actual or threatened releases of hazardous substances from Operable Unit 4, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

Description of the Remedy

This is the selected remedial action for Operable Unit 4, one of five operable units at the FEMP. The materials within Operable Unit 4 exhibit a wide range of properties. Most notable would be the elevated direct radiation associated with the K-65 residues versus the much lower direct radiation associated with cold metal oxides in Silo 3. Even more significant would be the much lower levels of contamination associated with the soils and building materials, like concrete, within the Operable Unit 4 Study Area. To account for these differences and for the varied cleanup alternatives applying to each waste type, Operable Unit 4 was segmented into

three subunits. These subunits are described as follows:

Subunit A: Silos 1 and 2 contents (K-65 residues and bentonite clay) and the sludge in the decant sump tank
Subunit B: Silo 3 contents (cold metal oxides)

Subunit C: Silos 1, 2, 3, and 4 structures; contaminated soils within the Operable Unit 4 boundary, including surface and subsurface soils and the earthen berm around Silos 1 and 2; the decant sump tank; the radon treatment system; the concrete pipe trench and the miscellaneous concrete structures within Operable Unit 4, any debris (i.e., concrete, piping, etc.) generated through implementing cleanup for Subunits A and B, and any perched groundwater encountered during remedial activities.

On the basis of the evaluation of final alternatives, the selected remedy addressing Operable Unit 4 at the FEMP is a combination of Alternatives 3A.1/Vit—Removal, Vitrification, and Off-site Disposal—Nevada Test Site (NTS); 3B.1/Vit—Removal, Vitrification, and Off-site Disposal—NTS; and 2C—Demolition, Removal and On-Property Disposal. These alternatives apply to Subunits A, B, and C respectively. The major components of the selected remedy include:

- Removal of the contents of Silos 1, 2, and 3 (K-65 residues and cold metal oxides) and the decant sump tank sludge.
- Vitrification (glassification) to stabilize the residues and sludges removed from the silos and decant sump tank.
- Off-site shipment for disposal at the NTS of the vitrified contents of Silos 1, 2, 3, and the decant sump tank.
- Demolition of Silos 1, 2, 3, and 4 and decontamination, to the extent practicable, of the concrete rubble, piping, and other generated construction debris.
- Removal of the earthen berms and excavation of contaminated soils within the boundary of Operable Unit 4, to achieve remediation levels. Placement of clean backfill to original grade following excavation.
- Demolition of the vitrification treatment unit and associated facilities after use. Decontamination or recycling of debris prior to disposition.
- On-property interim storage of excavated contaminated soils and contaminated debris in a manner consistent with the approved Work Plan for Removal Action 17 (improved storage of soil and debris) pending final disposition in accordance with the

Records of Decision for Operable Units 5 and 3, respectively.

- Continued access controls and maintenance and monitoring of the stored wastes inventories.
- Institutional controls of the Operable Unit 4 area such as deed and land use restrictions.
- Potential additional treatment of stored Operable Unit 4 soil and debris using Operable Unit 3 and 5 waste treatment systems.
- Pumping and treatment as required of any contaminated perched groundwater encountered during remedial activities.
- Disposal of Operable Unit 4 contaminated debris and soils consistent with the Records of Decision for Operable Units 3 and 5, respectively.

The remedy specifies off-site disposal of vitrified contents of Silos 1, 2 and 3 at the NTS. At the time of the signing of this ROD, The Department of Energy—Nevada Operations Office (DOE—NV) is in the process of preparing a site-wide environmental impact statement (EIS) under NEPA for the NTS. Shipments of Operable Unit 4 vitrified waste are not proposed to begin until after the planned completion of the EIS for the NTS.

The planned date of completion of the EIS for the NTS is December 1995, at which time a Record of Decision is expected to be issued. Shipments of low-level waste generated from the remediation of Operable Unit 4 are not proposed to begin until mid-1997, which should be after the planned completion of the NTS site-wide EIS. Given these timeframes, DOE does not anticipate the NTS EIS schedule will negatively impact the Operable Unit 4 remediation schedule discussed in the ROD.

The containerized vitrified product will require interim storage at the FEMP prior to its transportation to the NTS for disposal. The purpose of this interim storage is two-fold; first, the vitrified product will require verification sampling in order to certify that each production lot has met specific performance and waste disposal criteria; and second, to provide the Fernald waste shipping program a buffer staging area where the material can be safely managed prior to its shipment to NTS in accordance with DOE as low as reasonably achievable (ALARA) principles, ARARs identified and included in the Operable Unit 4 ROD, as well as in a manner protective of human health and the environment. It has been anticipated that the interim storage area will be needed to accommodate the interim handling of

approximately 90 days of vitrification production.

The decision regarding the final disposition of the remaining Operable Unit 4 contaminated soil and debris will be placed in abeyance, until completion of the Records of Decision for Operable Units 3 and 5 remedial actions, in order to take full advantage of planned and in progress waste minimization treatment processes by these operable units. Further, this strategy enables the integration of disposal decisions for contaminated soils and debris on a site-wide basis.

In the unlikely event unforeseen circumstances preclude the integration of Operable Unit 4 soil and debris into the Operable Unit 3 and/or Operable Unit 5 treatment and disposal decisions, the disposal decision for Operable Unit 4 contaminated soils and debris will be documented in a ROD amendment for Operable Unit 4 in accordance with Section 117(c) of CERCLA and United States Environmental Protection Agency (EPA) guidance. The ROD amendment will provide the public and the EPA further opportunity to review and comment on the final disposal option for Operable Unit 4 soils and debris. A ROD amendment to the Operable Unit 4 ROD will not be necessary in the event the Operable Unit 3 remedy for debris and the Operable Unit 5 remedy for contaminated soils can be feasibly implemented for Operable Unit 4.

In reaching the decision to implement this remedial alternative, DOE evaluated other alternatives for each subunit, in addition to no action. The other alternatives are: (a) Subunit A—Silos 1 and 2 Contents: (1) Removal, Cement Stabilization, Off-Site Disposal at Nevada Test Site; (b) Subunit B—Silo 3 Contents: (1) Removal, Vitrification, On-Property Disposal; (2) Removal, Cement Stabilization, On-Property Disposal; (3) Removal, Cement Stabilization, Off-Site Disposal at Nevada Test Site; (c) Subunit C—Silos 1, 2, 3, and 4 Structures, Soils, and Debris: (1) Demolition, Removal, Off-Site Disposal at Nevada Test Site; (2) Demolition, Removal, Off-Site Disposal at Permitted Commercial Facility.

A description of the alternatives is provided in the Decision Summary of the ROD, hereby incorporated by reference for DOE's NEPA ROD, and is available in the Administrative Record. CERCLA's nine criteria set forth in 40 CFR Part 300, the National Oil and Hazardous Substances Pollution Contingency Plan were used to evaluate the alternatives. The selected remedy represents the best balance among the alternatives with respect to these criteria

and is the environmentally preferable alternative.

The preferred alternative for Operable Unit 4 provides the best performance when compared with the other alternatives, with respect to the evaluation criteria. This remedy will achieve substantial risk reduction by removing the sources of contamination, treating the material which poses the highest risk, shipping the treated residues off-site for disposal, managing the remaining contaminated soils and debris consistent with the site-wide strategy. The selected treatment alternative both reduces the mobility of the hazardous constituents and results in significant reduction in the volume of materials requiring disposal. The selected remedy also provides the highest degree of long-term protectiveness for human health and the environment.

Statutory Determinations

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost effective. This remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable, and satisfies the statutory preference for remedies that employ treatment, and also reduce toxicity, mobility, or volume as a principal element. This remedy will result in contaminated debris and soil being dispositioned by Operable Units 3 and 5, respectively. Because this remedy will result in hazardous substances (i.e., contaminated soil and debris) remaining on site, above health-based levels, a review will be conducted every five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

All practical means to avoid or minimize environmental harm from implementation of the selected remedy have been adopted. During excavation activities, sediment controls will be implemented to eliminate potential surface water runoff and sediment deposition to Paddys Run. Final site layout and design will include all practicable means (e.g., sound engineering practices and proper construction practices) to minimize environmental impacts.

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