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WORK PLAN FOR THE OPERABLE UNIT 4 REMEDIAL DESIGN RESPONSE TO COMMENTS MAY 1995

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WORK PLAN FOR THE OPERABLE UNIT 4 REMEDIAL DESIGN

RESPONSE TO COMMENTS

Fernald Environmental Management Project
Fernald, Ohio

May 1995

U.S. DEPARTMENT OF ENERGY
Fernald Field Office

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APPENDIX A

- Letter, James A. Saric to Jack R. Craig, "Conditional Approval of Operable Unit 4 Remedial Design Work Plan", dated March 27, 1995 . . . . . A-1
- Letter, Thomas A. Schneider to Jack Craig, "Conditional Approval of Operable Unit 4 Remedial Design Work Plan", dated February 27, 1995 . . . A-4

RESPONSES TO USEPA COMMENTS ON THE OPERABLE UNIT 4 RD WORK PLAN

1. Commenting Organization: USEPA Commentor:
Section #: 4-5 Pg #: 4-14, 4-21, 4-23, 5-4, 5-10, 5-13, and Table 5-1
Line #: Code:
Original Comment #:

Comment: All Preliminary (30%) Review Packages and Pre-final (90%) Review Packages are "primary" documents as defined in the 1991 Amended Consent Agreement (ACA). The RD work plan must be changed throughout eliminating any reference to "secondary" documents, and clarifying that the documents are primary documents.

The term "target date" is used throughout the document. This term does not apply to RD activities under the existing ACA. Any reference of this term as applying to the ACA must be eliminated. The U.S. DOE may use target dates, but they have no meaning under the existing ACA when applied to RD activities.

Response: The text will be deleted and revised to clarify that all formal Preliminary (30%) and Pre-final (90%) review packages are "primary" documents as defined in the Amended Consent Agreement. All reference to "secondary" documents will be changed to "primary" documents throughout sections 4 and 5, and the term "target date" will be deleted throughout the documents.

Action: Revise per response.

2. Commenting Organization: Commentor:
Section #:5 Pg. #: 5-13 Line #: Code:
Original Comment #:

Comment: The comment response process as defined in the RD work plan is not consistent with the ACA. In the case of Preliminary (30%) Review Packages U.S. DOE must submit a comment response document, that must be approved by U.S. EPA. However, U.S. DOE may proceed with development of the Pre-Final (90%) Review Packages prior to U.S. EPA approval of the Preliminary Packages. All of U.S. EPA's comments with appropriate responses and changed pages must be incorporated into the Pre-Final (90%) Review Package.

Response: Line 11-18 will be modified to read as follows: "The DOE will address all comments on the formal Preliminary (30%) Design Review Packages, submitted by the EPA and OEPA through the submittal of a comment response document for EPA approval within 30 days of receipt of both agencies' comments. The DOE will not submit revised Preliminary design documents, unless specifically

requested by the agencies. All comments with appropriate responses and/or changed pages will be incorporated into the Pre-final (90%) design package."

Action: Revise per response.

3. Commenting Organization: USEPA Commentor: Saric
Section #: 4.1.5.1 Pg #: 4-6 Line #: NA Code:
Original Comment #: 1

Comment: The Phase I, Titles I and II Preliminary review packages should contain the results of the Phase I and Phase II pilot scale testing. This is critical for the evaluation of process design parameters for the vitrification process. The work plan should be amended to state that the results of pilot testing will be provided.

Response: DOE has reevaluated the technical and logical relationships between the Pilot Plant Phase I and II Treatability Study Program and the remedial management strategy for the development of Title I/II design support documentation (i.e., Functional Requirements Document and Design Criteria Package) and the engineering design efforts. The conditionally approved remedial design schedule reflects a direct logic tie between the completion of the Pilot Plant Treatability Study Program and the completion of the preliminary (30%) design review package for the Vitrification Plant. This aggressive design approach creates an inherent schedule risk arising from the completion of the remedial facility technical design basis [preliminary (30%) design review package] before the Pilot Plant Treatability Study Program is completed.

In consideration of this comment, corrective actions to the schedule have been implemented and are reflected in the revised schedule. The revised remedial design/remedial action schedule logically ties the completion of the Pilot Plant Phases I and II Treatability Study Program to the completion of Title I documentation for the Remedial Processing Facility in the following way. All Title I documentation will be updated and finalized to incorporate design and operational changes resulting from the data and "lessons learned" from the Pilot Plant Phases I and II Treatability Study Program. This action is necessary to maximize the technical benefit from the Pilot Plant Treatability Study Program; and, in doing so minimize the schedule risks associated with technical issues being addressed by the Pilot Plant Phases I/II Treatability Study Program (e.g., scale-up parameters).

Action: The following paragraph will be inserted after line 2 on page 4-7: "The Phase I, Title I documentation for the Vitrification Plant will be updated and finalized by incorporating any design and operational changes resulting from the data and the lessons-learned from the Pilot Plant Phases I and II Treatability Study Program. The results of the Pilot Plant Phases I and II Treatability Study Testing

will be incorporated into the Phase I, Title I Design Review Package for the Vitrification Plant.

4. Commenting Organization: USEPA Commentor: Saric
Section #: 4.2.4 Pg #: 4-14 Line #: NA Code:
Original Comment #: 2

Comment: The intermediate design meeting is important to determine if the Pre-final design will accomplish the objectives of the removal action. The work plan should be amended to include this requirement.

Response: As stated in section 5.3.2 of the work plan, presentations or teleconferences with the EPA and OEPA to review specific intermediate design issues will be conducted as requested by the agencies.

Action: None.

5. Commenting Organization: USEPA Commentor: Saric
Section #: 4.5.3 Pg #: 4-40 Line #: NA Code:
Original Comment #: 3

Comment: The Preliminary review package should describe the coordination of waste disposal options developed for Operable Unit 5 and Operable Unit 3. The work plan should be amended to include this requirement.

Response: Waste disposition of the final remedial waste streams, i.e. silo structures, soil, debris, etc., will be covered during the Operable Unit 4 Final Site Remediation design by which time the Operable Unit 5 and Operable Unit 3 RODs are scheduled to be approved. This will allow for the integration of the approved Operable Unit 3 and Operable Unit 5 waste disposition approach into the Operable Unit 4 design and final remediation strategy. Waste disposition coordination with Operable Unit 3 and Operable Unit 5 will be discussed in Title I documentation and will be finalized and incorporated as part of the Title II design.

Action: The last sentence of the first paragraph of section 4.5.3 will be replaced with the following: "Waste disposition coordination with Operable Unit 3 and Operable Unit 5 will be discussed in the Operable Unit 4 Title I/II, Decontamination and Decommission/Waste Management design documentation and will be finalized and incorporated as part of the Title I/II, Final Site Remediation design."

RESPONSES TO OEPA COMMENTS ON THE OPERABLE UNIT 4 RD WORK PLAN

1. Commenting Organization: Ohio EPA Commentor: ODH
Section #: 2.0 Pg #: 2-7 Line #: 17-18 Code: C
Original Comment #:

Comment: Assumed background uranium concentrations in groundwater are given at 3 ppb (average). The constraint of requiring an analytical detection limit significantly (30 times) below background is unsound, both statistically and economically.

Response: DOE agrees that requiring an analytical detection limit significantly below background is unsound. Pursuant to the Sitewide CERCLA Quality Assurance Project Plan (SCQ), September 1992, Appendix G, Table G-3 (pages 43-44); The FEMP Sitewide detection limits for radiochemical analysis for Uranium-238 in a water matrix (ASL B) is 0.4 pCi/L (1.2 ppb). This is the highest allowable minimum detectable concentration, which happens to be approximately half of background (1pCi/L or 3ppb).

Action: No action.

2. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg #: 3-1 Line #: 13 Code: C
Original Comment #:

Comment: Any possible reuse of the equipment utilized in the MAWS project was not mentioned in this document. DOE should consider any reuse of this equipment that would result in a savings of time and money.

Response: The Pilot Plant will utilize existing FEMP process and laboratory equipment classified as excess as a cost saving measure. However, the MAWS equipment is not being considered for incorporation into the Operable Unit 4 Remedial Design. Currently, the MAWS system, which is not solely owned by DOE, is being considered for FEMP and other DOE site waste streams as a treatability test system, and therefore, is not available for use in the OU4 Pilot Plant. In addition, as a result of prior treatability analysis at PNL, it is felt that the design of the MAWS melter is unsuitable to vitrify the OU4 waste streams.

Action: No action.

3. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg #: 3-5 Line #: 1 Code: C
Original Comment #:

Comment: (a) The text states that contaminated soil and debris will be disposed of according to Operable Unit 5 and Operable Unit 3 remedies or placed in an interim storage facility. Provide a timeline describing when the remedies will be in place including when the soil will be disposed.

(b) In addition, DOE needs to provide more information on the proposed interim storage facility including design and location of the facility.

Response: (a) The remediation of contaminated soils and debris within the Operable Unit 4 boundary will be performed as part of Final Site Remediation activities. The "Remedial Design Summary Schedule" included in the work plan identifies the forecast time period for the Final Site Remediation activities. Details regarding the final site remedial methodologies and schedule will be provided as part of the Title I/II - Final Site Remediation Pre-final (90%) Design package.

(b) See Response to OEPA comment number 12.

Action: (a) No further action required.

(b) See action description to OEPA comment number 12.

4. Commenting Organization: Ohio EPA Commentor: ODH
Section #: 3.2 Pg #: Table 3-1 Line #: Code: C
Original Comment #:

Comment: This table is unclear, i.e. U-238 has a proposed guideline of 60 pCi/g which translates into a risk factor of 1E-6. That guideline is for U-238 and its progeny. Additional progeny have also been given risk levels which are unclear and are not well documented. How were these values calculated? This table requires clarification.

Response: These risk levels were calculated using standard USEPA risk assessment methodology and guidance per U.S. Environmental Protection Agency (EPA), "Risk Assessment Guidance for Superfund: Human Health Evaluation Manual, Part A, Interim Final," EPA/540/1-89/002, EPA, Office of Emergency and Remedial Response, Washington, D.C.. Cancer slope factors derived by the EPA and published in the USEPA, Health Effects Assessment Summary Tables, Annual FY 1992, including the July 1992 and November 1992 supplements (HEAST Tables) were used in calculating the risk levels. The Cancer slope factor for U-238 is presented in the HEAST Table as U-238 + 2 progeny. This

standard EPA methodology is not only used for representing risks from U-238 but many other radionuclides. The derivation of all risk values can be found in Appendix D of the approved RI for Operable Unit 4 (November 1993) and Appendix D of the approved FS for Operable Unit 4 (February 1994).

Action: No additional action required.

5. Commenting Organization: Ohio EPA Commentor: ODH
Section #: 4.0 Pg #: 4-6 Line #: 3-11 Code: C
Original Comment #:
Comment: Will the slurry be created within the silos? If so, is there a mechanism in place to detect potential leakage through the silo walls?

Response: The slurry will be created within the silos and simultaneously pumped out via a slurry pump. Removal of material from Silos 1 and 2 and remediation of the area is not expected to contribute to groundwater contamination in the vicinity. The hydraulic mining operation would pump water into a limited area of the silo in the vicinity of the pump to form a small pool of slurried material that is simultaneously being suctioned out for treatment in the vitrification unit. During hydraulic removal, water used to slurry silo material is pumped out at the same rate it is pumped into the silos. At no time during the hydraulic mining operation should there be flooding of the silos. Any free standing liquids would be pumped out after the influent water valves to the slurry jets are closed. Therefore, it is reasoned that hydraulic mining will not significantly contribute to leakage from the silos, which have held free liquids for approximately 40 years. In addition, the decant sump tank underneath the silos is fully functional and continues to be monitored on an ongoing basis. Furthermore, the decant sump tank will continue to be monitored and any accumulated liquids from the silo underdrain managed on a continuous basis throughout OU4 remediation activities. By monitoring the rate and frequency at which the decant sump tank reaches capacity, the potential impacts of hydraulic mining on the leakage rate of the silos will be able to be determined.

The decant sump tank system consists of a silo underdrain which extends out beyond the perimeter of the silo walls. This underdrain collects liquids that may be leaking from the bottom of the silos, as well as seepage from the walls of the silos that would migrate down to the underdrain. The decant sump tank drains and contains liquids collecting in the underdrain of the silos. Liquids collected in the decant sump tank are periodically pumped and treated in the FEMP Advanced Waste Water Treatment System.

Action: None Required.

6. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.1.3 Pg #: 4-2 Line #: 19 Code: C
Original Comment #:
Comment: Provide a date for the submittal of the design criteria package.

Response: The submittal of the design criteria package will be provided as part of a submittal entitled, "Functional Requirements Documents/Design Criteria Package" with the Remedial Design Summary Schedule provided in the work plan.

Action: Table 5-1 has been revised to more clearly identify this deliverable.

7. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.1.5.2 Pg #: 4-7 Line #: 8 Code: C
Original Comment #:
Comment: This section states that the Silo 4 superstructure may be reutilized after further engineering studies and evaluation. As Silo 4's structural integrity will be questionable, similar to the other silos what possible beneficial use could this silo have? Since Silo 4 has never been used and is essentially "uncontaminated," it would make sense that the demolition and removal of this "uncontaminated" silo as stated in the Operable Unit 4 ROD, would be the most practical and cost effective outcome.

Response: The term, Silo 4 "**SUPERSTRUCTURE**" refers to the overhead steel structure that will span Silo 4 and support the mining equipment for the silo material retrieval demonstration. The Silo 4 concrete structure will be dismantled and disposed as stated in the Operable Unit 4 ROD. Based upon the outcome of remedial design studies, the Silo 4 superstructure may be reused over another Silo to support waste retrieval operations during remediation as a method to reduce costs.

Action: None required.

8. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.2.2 Pg #: 4-12 Line #: 16 Code: C
Original Comment #:
Comment: This section of the document describes the berm being lowered as the contents of the silo are emptied to equalize pressure on the silo. Provide additional information on how this is to be accomplished. If this data will be included in another document, please describe in which document this will appear.

Response: The approach and the extent to which the silo berms will be lowered to accommodate waste retrieval operations is to be determined during the remedial

design, specifically during the Silos 1, 2, and 3 Superstructures Design effort. As indicated in Table 5-1, EPA will have the opportunity to review this information during the Silo Superstructures Title I/II Pre-final (90%) submittal.

Action: The information will be provided in the Silos Superstructures Title I/II Pre-final (90%) submittal.

9. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.2.2 Pg #: 4-12 Line #: 23-24 Code: C
Original Comment #:
Comment: This section states that water will be removed from the residue slurry to achieve a predetermined water content ratio of the feed material for the melter. Please include in further detail the ultimate destination of this removed water. For example, (will this water be contained, sent to the AWWT, or recycled as process water), please expand.

Response: Section 4.6.1.3 provides a more detailed discussion on the management of wastewater resulting from the remediation of Operable Unit 4. The Title II design for the Vitrification Plant will identify the ultimate destination of the removed slurry water; however, the process design is expected to be based on operational data and lessons learned from the Operable Unit 4 Pilot Plant Phases I and II Treatability Study Program. The current Pilot Plant process design shows the Thickener overflow water being recycled as process water, with a small bleed-off stream being filtered and pumped to the AWWT.

Action: No further Action Required.

10. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.2.2 Pg #: 4-13 Line #: 7 Code: C
Original Comment #:
Comment: Please further define within the text what is meant by the term "battery limits of the Operable Unit 4 area."

Response: The battery limits of the Operable Unit 4 area contain the boundary, limitations, and physical constraints of the Operable Unit 4 area. The text will be revised to read, "The berm soils will be stockpiled and appropriately managed within the Operable Unit 4 boundary."

Action: Revise per response.

11. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.2.3 Pg #: 4-13 Line #: 16-18 Code: C
Original Comment #:
Comment: This section states that an interim storage area sufficient to accommodate the handling of approximately 90 days of vitrification product will be required. Please include a brief discussion within the text which states what the anticipated volume of 90 days of vitrified product would be.

Response: A preliminary evaluation of the interim storage requirements to support the Operable Unit 4 Vitrification Plant has been completed as part of the Title I remedial design support documentation. It has been determined that an interim storage capacity of approximately 20 days will be provided at the vitrification facility. This is based upon the sampling and analysis strategy to support the waste acceptance criteria requirements of the Nevada Test Site (NTS) for disposal of the final product as well as the NTS operations schedule.

In the event of a temporary suspension of all FEMP offsite shipments (including to the NTS), a contingency plan identifying storage space for up to 90 days will be developed to allow the Operable Unit 4 Vitrification Plant to continue operations. The specific details of the 20-day and 90-day storage areas will be provided in the Preliminary (30%) and Pre-final (90%) remedial design package submittals for the Vitrification Plant.

As a result of the revaluation of the remedial design/remedial action schedule to address U.S. EPA concerns on the logical integration of the Pilot Plant Phases I and II Treatability Study Program into the remedial design process, a revised schedule and design submittal strategy has been developed. Since the interim storage facility is no longer proposed to be a stand alone facility as originally envisioned, it will be eliminated a separate design package submittal, however, it will be included with the Vitrification Plant design submittal as stated above.

Action: The interim storage facility discussion has been deleted. The aforementioned information will be included as an element of the Preliminary (30%) and Pre-final (90%) remedial design submittals for the Vitrification Plant.

12. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.2.3 Pg #: 4-13 Line #: 19 Code: C
Original Comment #:
Comment: Provide additional information (i.e. design, capacity, location, etc.) regarding the interim storage facility for vitrified material.

Response: Detailed information on the Interim Storage Facility cannot be provided at this time, however, EPA will have the opportunity to review the interim storage approach in detail at the Preliminary (30%) and Pre-final (90%) Vitrification Plant design package submittals.

Action: See Action to OEPA Comment 11.

13. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.5.1.2 Pg #: 4-28 Line #: 1-10 Code: C
Original Comment #:

Comment: This section states that the FEMP will conduct radiological air monitoring on a weekly basis during implementation of the RA. It seems practical that radiological air monitoring should occur on an hourly basis during implementation of the RA as different aspects of the RA could cause increased air emissions over other aspects. For example, when soil excavation occurs, this activity has the possibility of releasing particulate in to the air, especially if occurring during the summer months. Weekly monitoring would not detect a potentially harmful release to the environment which may have occurred earlier in the week. This air monitoring program should be modified accordingly.

Response: The environmental monitoring referenced under the section entitled "Site-wide Emissions Monitoring" refers to an ongoing environmental monitoring program for the entire FEMP site, not just for Operable Unit 4. In addition to radiological air monitoring conducted for worker protection, environmental air monitoring will be conducted during Operable Unit 4 remedial activities in accordance with the approved Operable Unit 4 ARARs referenced in Attachment A. For example, during operation of the vitrification facility, continuous sampling will be performed at the stack for radionuclides as required under 40 CFR Part 61 Subpart H. Continuous monitoring will also be performed for radon during vitrification to ensure the annual average concentration of 3 pCi/L at the fenceline, established in DOE Order 5400.5, is maintained. Furthermore, performance testing under the Ohio Air Toxics Policy will be conducted at the stack to ensure compliance with the best available technology requirements for a permit to install (OAC 3745-31-05(A)(3)).

Field monitoring for radionuclides will be conducted on an activity specific basis in accordance with site procedures and requirements under DOE 10 CFR Part 835 for worker protection and to evaluate personnel exposure. This will be an ongoing activity as long as there is project activity in the field. This combination of regulatory and health and safety driven requirements will be adequate to ensure protection of site workers, the public, and the environment from airborne radionuclides.

Action: The section entitled "Site-wide Emissions Monitoring" will be deleted from the text, and the text clarified to be in accordance with this response.

14. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.5.1.4 Pg #: 4-35 Line #: 9 Code: C
Original Comment #:

Comment: The text states that "if existing programs are insufficient...additional wells could be added to the groundwater monitoring program to determine the effects of any remedial activity on the groundwater." If this data is being developed in accordance with Operable Unit 5, please provide a date for the review of this data. The review should be completed as soon as possible in order for new wells to be installed as early as possible before the operation of the vitrification plant if necessary.

Response: There is an on-going sitewide groundwater monitoring program in existence at the FEMP that is conducted by OU5. As indicated in the OU4 ROD, groundwater monitoring in support of final remediation of OU4 will be conducted by OU5 in accordance with the OU5 ROD. Wells in the vicinity of OU4 were installed as part of the Remedial Investigation (RI) effort, but are no longer monitored on a routine basis. Since the RI for OU5 did not indicate that OU4 is a source of existing sitewide groundwater contamination, CRU4 does not propose to routinely sample the existing wells. However, the wells are serviceable, and will be preserved during final remediation to the extent practicable, in case they need to be monitored in the future.

As stated in comment response number 5, removal of material from Silos 1 and 2 and remediation of the area is not expected to contribute to groundwater contamination in the vicinity. The hydraulic mining operation would pump water into a limited area of the silo in the vicinity of the pump to form a small pool of slurried material that is simultaneously being suctioned out for treatment in the vitrification unit. During hydraulic removal, water used to slurry silo material is pumped out at the same rate it is pumped into the silos. At no time during the hydraulic mining operation should there be flooding of the silos. Any free standing liquids would be pumped out after the influent water valves to the slurry jets are closed. Therefore, it is reasoned that hydraulic mining will not significantly contribute to leakage from the silos, which have held free liquids for approximately 40 years. In addition, the decant sump tank underneath the silos is fully functional and continues to be monitored on an ongoing basis. Furthermore, the decant sump tank will continue to be monitored and any accumulated liquids from the silo underdrain managed on a continuous basis throughout OU4 remediation activities. By monitoring the rate and frequency at which the decant sump tank reaches capacity, the potential impacts of hydraulic mining on the leakage rate of the silos will be able to be determined.

Final remediation will be conducted in accordance with the ARARs identified in the ROD, as presented in Appendix A of the RDWP. Appropriate design and operational controls to prevent spills or discharges that may affect groundwater, such as secondary containment for silo wastes containing liquids, will be developed in detail in the Title I design package submittals. Since there are no land disposal facilities or solid waste management units (SWMUs) in OU4, no groundwater monitoring is planned as part of OU4 final remediation. If it is discovered during final remediation that there has been a spill or release, or suspected release of a hazardous substance which could impact the groundwater, then OU5 will be notified. In addition to spill response, a Removal Site Evaluation (RSE) would normally be conducted to evaluate the potential impact on soil and groundwater media to determine whether a removal action should be conducted. A removal action could include sampling of existing groundwater monitoring wells in proximity to OU4 to determine impacts on groundwater, and/or placement of additional monitoring wells. Any groundwater monitoring activities involving OU4 will be coordinated by OU5.

Action: The referenced section of the work plan will be revised to clarify the groundwater monitoring requirements for OU4.

15. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.5.1.5 Pg #: 4-39 Line #: 15 Code: C
Original Comment #:

Comment: The document states that design activities related to the demolition and decontamination of the silos will be developed consistent with the Operable Unit 3 and Operable Unit 5 RODS and RDWPs. Seeing that the Operable Unit 4 and Operable Unit 3/Operable Unit 5 projects will be operating independently of each other and on different time tables, DOE should develop an independent program for the demolition and decontamination of the silos. The silos should be demolished as soon as possible after the completion of the vitrification project and the debris disposed of properly. OEPA feels it would be unsafe for the silos to sit empty both from the standpoint of a structural hazard and radon emissions from the silo.

Response: The Decontamination & Demolition (D&D) program for the Operable Unit 4 silos will be independent of Operable Unit 3 and Operable Unit 5. As stated in Section 4.3.3 of the RD Work Plan, the Phase II D&D remedial design will focus on the removal of the four silos, related structures, and remedial processing facilities. While the design will be developed consistent with the Operable Unit 5 and Operable Unit 3 RODs, implementation of D&D for the Operable Unit 4 silos will be independent of the Operable Unit 3 and Operable Unit 5 schedules. All D&D of structures and contaminated soils in Operable Unit 4 will be done by

Operable Unit 4, rather than Operable Unit 3 or Operable Unit 5, respectively.

While independent, there is expected to be close coordination and integration with Operable Unit 2 regarding on-site disposal of rubble and debris, with Operable Unit 3 for the latest decontamination technologies, and with Operable Unit 5 regarding final cleanup of the soil. As indicated in Section 4.3.3, the remedial design efforts have been structured to ensure that substantial, physical and continuous remedial activities continue once the remedial treatment operations involving the residues are completed, since the empty silos will continue to be a structural hazard after the contents have been removed. As described in the work plan, the remedial action sequence is to begin final site remediation, including D&D of the silos and final debris disposition, as soon as practicable following residue removal and vitrification operations.

Radon generation at the silos is dependent on the presence of radium. After the silo contents have been removed, a radium source will no longer be present. Although the silos will continue to present a structural hazard, radon from the silo structures should not be a problem after the silo contents have been removed and treated.

Action: Text will be revised to indicate that the Operable Unit 4 design activities will be developed consistent with the Operable Unit 3 and Operable Unit 5 RODs, and to clarify that D&D of Operable Unit 4 structures will not be dependent on Operable Unit 3 and Operable Unit 5 schedules, but will be initiated as soon as practical following residue removal activities.

APPENDIX A

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MAR 2 1 1995

Mr. Jack R. Craig
United States Department of Energy
Feed Materials Production Center
P.O. Box 398705
Cincinnati, Ohio 45239-8705

RE: Conditional Approval of OU 4
Remedial Design Work Plan

Dear Mr. Craig:

The United States Environmental Protection Agency (U.S. EPA) has completed its review of the Operable Unit (OU) 4 Remedial Design (RD) Work Plan. The RD work plan divides the remedial action into two phases: silo residue treatment facility, and final site remediation. The work plan also describes the tasks in detail and provides an adequate schedule.

U.S. EPA does have a few issues that require correction. All Preliminary (30%) Review Packages and Pre-final (90%) Review Packages are "primary" documents as defined in the 1991 Amended Consent Agreement (ACA). The RD work plan must be changed throughout eliminating any reference to "secondary" documents. Also the term "target date" is used throughout the document. This term does not apply to RD activities under the existing ACA. Any reference of this term as applying to the ACA must be eliminated.

Therefore, U.S. EPA approves the RD work plan pending incorporation of adequate responses to the attached comments. U.S. DOE must submit a revised RD work plan with responses to comments within thirty (30) days receipt of this letter.

Please contact me at (312) 886-0992 if you have any questions.

Sincerely,

James A. Saric
Remedial Project Manager
Technical Enforcement Section #1
RCRA Enforcement Branch

Enclosure

cc: Tom Schneider, OEPA-SWDO
Jack Baublitz, U.S. DOE-HDQ
Don Ofte, FERMCO
Jim Thiesing, FERMCO
Terry Hagen, FERMCO

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U.S. EPA COMMENTS ON THE OU 4 REMEDIAL DESIGN WORK PLAN

Pages 4-14, 4-21, 4-23, 5-4, 5-10, 5-13, and Table 5-1:

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Page 5-13:

The comment response process as defined in the RD work plan is not consistent with the ACA. In the case of Preliminary (30%) Review Packages U.S. DOE must submit a comment response document, that must be approved by U.S. EPA. However, U.S. DOE may proceed with development of the Pre-Final (90%) Review Packages prior to U.S. EPA approval of the Preliminary Packages. All of U.S. EPA's comments with appropriate responses and changed pages must be incorporated into the Pre-Final (90%) Review Package.

TECHNICAL REVIEW COMMENTS ON THE OPERABLE UNIT 4 REMEDIAL DESIGN WORK PLAN, REVISION 0, FEBRUARY 1995 FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

SPECIFIC COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.1.5.1 Page #: 4-6 Line #: NA
Original Specific Comment #: 1
Comment: The Phase I, Titles I and II preliminary review packages should contain the results of the Phase I and Phase II pilot scale testing. This is critical for the evaluation of process design parameters for the vitrification process. The work plan should be amended to state that the results of pilot testing will be provided.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.2.4 Page #: 4-14 Line #: NA
Original Specific Comment #: 2
Comment: The intermediate design meeting is important to determine if the pre-final design will accomplish the objectives of the removal action. The work plan should be amended to include this requirement.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.5.3 Page #: 4-40 Line #: NA
Original Specific Comment #: 3
Comment: The preliminary review package should describe the coordination of waste disposal options developed for OU 5 and OU 3. The work plan should be amended to include this requirement.

OhioEPA

State of Ohio Environmental Protection Agency

Southwest District Office
401 East Fifth Street
Dayton, Ohio 45402 2911
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George V. Voinovich
Governor

February 27, 1995

RE: DOE FEMP
MSL# 531-0297
HAMILTON COUNTY
CONDITIONAL APPROVAL
OU-4 RDWP

Mr. Jack Craig
Director
U.S. DOE FEMP
P.O. Box 398705
Cincinnati, OH 45329-8705

Dear Mr. Craig:

This letter provides conditional approval of DOE's Work Plan for the Operable Unit 4 Remedial Design submitted to Ohio EPA on January 26, 1995. The approval of the work plan is contingent upon satisfactory resolution of the attached comments. If you have any questions, please contact Kelly Kaletsky at 513-285-6454 or Timothy Hull at 513-285-6075.

Sincerely,

Kelly Kaletsky / for

Thomas A. Schneider
Feranld Group Leader
Office of Federal Facilities Oversight

cc w/att: Ruth H. Vandegrift, ODH
Jim Saric, USEPA
Jean Michaels, PRC
Lisa August, GeoTrans
Randi Allen, DOE
Mike Scriba, FERMCO

COMMENTS ON THE OU4 RD WORKPLAN

1) Commenting Organization: Ohio EPA Commentor: ODH
Section #: 2.0 Pg #: 2-7 Line #: 17-18 Code: C
Original Comment #:
Comment: Assumed background uranium concentrations in groundwater are given at 3ppb (average). The constraint of requiring an analytical detection limit significantly (30 times) below background is unsound, both statistically and economically.
Response:
Action:

2) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg #: 3-1 Line #: 13 Code: C
Original Comment #:
Comment: Any possible reuse of the equipment utilized in the MAWS project was not mentioned in this document. DOE should consider any reuse of this equipment that would result in a savings of time and money.
Response:
Action:

3) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg #: 3-5 Line #: 1 Code: C
Original Comment #:
Comment: The text states that contaminated soil and debris will be disposed of according to OU-5 and OU-3 remedies or placed in an interim storage facility. Provide a timeline describing when the remedies will be in place including when the soil will be disposed. In addition, DOE needs to provide more information on the proposed interim storage facility including design and location of the facility.
Response:
Action:

4) Commenting Organization: Ohio EPA Commentor: ODH
Section #: 3.2 Pg #: Table 3-1 Line #: Code: C
Original Comment #:
Comment: This table is unclear, i.e. U-238 has a proposed guideline of 60 pCi/g which translates into a risk factor of 1E-6. That guideline is for U-238 and it's progeny. Additional progeny have also been given risk levels which are unclear and are not well documented. How were these values calculated? This table requires clarafication.
Response.
Action:

5) Commenting Organization: Ohio EPA Commentor: ODH
Section #: 4.0 Pg #: 4-6 Line #: 3-11 Code: C
Original Comment #:
Comment: Will the slurry be created within the silos? If so, is there a mechanism in place to detect

potential leakage through the silo walls?
Response:
Action:

6) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.1.3 Pg #: 4-2 Line #: 19 Code: C
Original Comment #:
Comment: Provide a date for the submittal of the design criteria package.,
Response:
Action:

7) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.1.5.2 Pg #: 4-7 Line #: 8 Code: C
Original Comment #:
Comment: This section states that the Silo 4 superstructure may be reutilized after further engineering studies and evaluation. As Silo 4's structural integrity will be questionable, similar to the other silos what possible beneficial use could this silo have? Since Silo 4 has never been used and is essentially "uncontaminated", it would make sense that the demolition and removal of this "uncontaminated" silo as stated in the OU4 ROD, would be the most practical and cost effective outcome.
Response:
Action:

8) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.2.2 Pg #: 4-12 Line #: 16 Code: C
Original Comment #:
Comment: This section of the document describes the berm being lowered as contents of the silo are emptied to equalize pressure on the silo. Provide additional information on how this is to be accomplished. If this data will be included in another document, please describe in which document this will appear.
Response:
Action:

9) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.2.2 Pg #: 4-12 Line #: 23-24 Code: C
Original Comment #:
Comment: This section states that water will be removed from the residue slurry to achieve a pre-determined water content ratio of the feed material for the melter. Please include in further detail the ultimate destination of this removed water. For example, (will this water be contained, sent to the AWWT, or recycled as process water), please expand.
Response:
Action:

10) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.2.2 Pg #: 4-13 Line #: 7 Code: C
Original Comment #:

Comment: Please further define within the text what is meant by the term "battery limits of the OU4 area".
Response:
Action:

11) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.2.3 Pg #: 4-13 Line #: 16-18 Code: C
Original Comment #:
Comment: This section states that an interim storage area sufficient to accommodate the handling of approximately 90 days of vitrification product will be required. Please include a brief discussion within the text which states what the anticipated volume of 90 days of vitrified product would be.
Response:
Action:

12) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.2.3 Pg #: 4-13 Line #: 19 Code: C
Original Comment #:
Comment: Provide additional information (i.e. design, capacity, location, etc.) regarding the interim storage facility for vitrified material.

Response:
Action:

13) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.5.1.2 Pg #: 4-28 Line #: 1-10 Code: C
Original Comment #:
Comment: This section states that the FEMP will conduct radiological air monitoring on a weekly basis during implementation of the RA. It seems practical that radiological air monitoring should occur on an hourly basis during implementation of the RA as different aspects of the RA could cause increased air emissions over other aspects. For example, when soil excavation occurs, this activity has the possibility of releasing particulate in to the air, especially if occurring during the summer months. Weekly monitoring would not detect a potentially harmful release to the environment which may have occurred earlier in the week. This air monitoring program should be modified accordingly.
Response:
Action:

14) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.5.1.4 Pg #: 4-35 Line #: 9 Code: C
Original Comment #:
Comment: The text states that "if existing programs are insufficient....additonal wells could be added to the groundwater monitoring program to determine the effects of any remedial activity on the groundwater." If this data is being developed in accordance with OU-5, please provide a date for the review of this data. The review should be completed as soon as possible in order for new wells to be installed as early as possible before the operation of the vitrification plant if necessary.
Response:

Action:

15) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.5.1.5 Pg #: 4-39 Line #: 15 Code: C
Original Comment #:
Comment: The document states that design acitvities related to the demolition and decontamination of the silos will be developed consistent with the OU-3 and OU-5 RODS and RDWPs. Seeing that the OU-4 and OU-3/5 projects will be operating independently of each other and on different time tables, DOE should develop an independent program for the demolition and decontamination of the silos. The silos should be demolished as soon as possible after the completion of the vitrification project and the debris disposed of properly. OEPA feels it would be unsafe for the silos to sit empty both from the standpoint of a structural hazard and radon emissions from the silo.
Response:
Action: