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**TRANSMITTAL OF RESPONSES TO COMMENTS ON THE OPERABLE UNIT 4
VITRIFICATION PILOT PLANT PHASE I TREATABILITY STUDY WORK
PLAN**

05/09/96

**DOE-0889-96
DOE-FN EPAS
16
RESPONSES**



Department of Energy

**Ohio Field Office
Fernald Area Office**

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MAY 09 1996

• DOE-0889-96

**Mr. James A. Saric, Remedial Project Director
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. Saric and Mr. Schneider:

**TRANSMITTAL OF RESPONSES TO COMMENTS ON THE OPERABLE UNIT 4
VITRIFICATION PILOT PLANT PHASE I TREATABILITY STUDY WORK PLAN**

Enclosed is the response to comments document which addresses the result of your review of the *Operable Unit 4 Vitrification Pilot Plant Phase I Treatability Study Work Plan, Rev. 1 (February 1996)*.

With the submittal of these responses, the Department of Energy (DOE) will proceed with its preparation for Phase I operations which includes bakeout of the melter. The DOE will not initiate the Campaign 1 of Phase I operations until the concurrence of your respective agencies with the enclosed comment responses has been obtained.

If you have any additional questions or concerns, please contact Nina Akgunduz at (513) 648-3110.

Sincerely,

**Johnny W. Reising
Fernald Remedial Action
Project Manager**

FN:Akgunduz

Enclosure: As Stated

cc w/enc:

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**OPERABLE UNIT 4
VITRIFICATION PILOT PLANT
PHASE I, TREATABILITY STUDY
WORK PLAN, REVISION 1**

RESPONSE TO COMMENTS

**Fernald Environmental Management Project
Fernald, Ohio**



May 1996

**U.S. DEPARTMENT OF ENERGY
Fernald Field Office**

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1.0 Responses to USEPA comments on the Operable Unit 4 Vitrification Pilot Plant Phase I Treatability Study Work Plan, Revision 1 (February 1996) 1

APPENDIX A

Letter, James A. Saric to Johnny W. Reising, "OU4 Pilot Plant Treatability Study Work Plan,"

U.S. EPA Comments on the Operable Unit 4 Vitrification Pilot Plant Phase I Treatability Study Work Plan, Rev. 1

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 2.2 Page #: 2-4 Line #: 9 and 10
 Original Specific Comment #: 4

Comment: The text states that "lead and barium in the K-65 material has [sic] the potential to undergo phase separation, and/or crystallization, or precipitate in the melter." However, the text does not clearly state how the VITPP testing program would address this situation. Although subsequent sections discuss foam prevention measures such as reducing the waste feed rate to the vitrification unit and reducing the vitrification unit's temperature, no discussion is provided of how metal separation, crystallization, or precipitation would be handled. One possible solution would be to install a discharge tap at the bottom of the vitrification unit for use in removing the metal slag. The work plan should be revised to discuss how the VITPP testing program will address the metal separation issue.

Response: Will revise text to clarify potential problems with lead and barium and planned corrective actions.

Action: Revised paragraph to describe use of oxidizing atmosphere to prevent formation of elemental lead, planned recovery from such an event, and the low likelihood of barium crystallization.

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 2.2 Page #: 2-8 Line #: 12
 Original Specific Comment #: 5

Comment: The text refers to the "film cooler" as one of the sources of off-gas from the VITPP. However, the film cooler's location and description are not provided in Figure 2-2, VITPP Process Flow Diagram - Phase I, or in Table 5-1, VITPP - Phase I Equipment List. The work plan should be revised to provide the location and description of the film cooler in this section.

Response: Film cooler will be called out consistently. The purpose of the film cooler is to introduce ambient air into the melter outlet to help cool the off-gas. As such, the film cooler is technically not a "source" of additional contaminants.

Action: Added film cooler to Figure 2-2 and Table 5-1. Revised text so as not to indicate film cooler as a source.

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 2.2 Page #: 2-9 Line #: 1 through 4
 Original Specific Comment #: 6

Comment: The text discusses routinely monitored off-gas parameters but fails to include acidic gases. Because a caustic scrubber is shown in Figure 2-2, VITPP Process Flow Diagram - Phase I, apparently for treating acidic gases, the work plan should be revised to include routine monitoring of acidic gases. Monitoring this parameter will reveal whether the caustic scrubber is operating properly.

Action: Added compounds (shown as oxides) identified in BentoGrout® to Table 5-2. Noted in text that actual BentoGrout® will be used in Phase I.

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 6.2 Page #: 6-2 Line #: NA
 Original Specific Comment #: 13

Comment: This section discusses startup and operational sampling and analysis. Comparison of this summary of the planned sampling and analysis with the performance objectives in Table 3-1 indicates that the sampling and analysis are inadequate. Additional samples and analyses will be needed to confirm the performance of the quench tower (for example, temperature will need to be monitored), scrubber (acid gas removal efficiency), and desiccant tower (water removal efficiency). Even if such parameters will be monitored continuously, several confirmatory samples will be needed to verify the precision and accuracy of the monitoring instrumentation. The work plan should be revised to address this issue, as well as address calibration standards for monitoring devices.

Response: The performance objectives identified in Table 3-1 are addressed with a combination of sampling and continuous monitoring efforts. Each data-generating method was selected based on the data users' needs and reliability of the method. Planned samples and analyses are given in Table 6-1. The data generated through field sampling and analytical laboratory efforts and in-line monitoring devices will be reviewed to determine the effectiveness of the Quench Tower, Scrubber, and Desiccant Tower. All in-line monitoring devices are regularly calibrated. VITPP Maintenance Instrument Mechanics have complete records on each device and have a tracking/status system to schedule routine maintenance activities. The effectiveness of standard control technology such as the scrubber (for removing acid gases such as SO₂) and HEPA filter (for removing particulate material) is well documented in standard applications and will not be confirmed during Phase I by such means as sampling and analysis.

Action: Removed references to scrubber and HEPA filter from Table 3-1 and revised discussion in Section 3.2.6.

Commenting Organization: U. S. EPA Commentor: Saric
 Section #: 6.3 Page #: 6-4 through 6-12 Line #: Table 6-1
 Original Specific Comment #: 14

Comment: This table outlines the proposed sampling and analysis program for VITPP Phase I testing. However, additional information is needed to evaluate the adequacy of the program. The following additional information should be provided:

- For each analytical parameter, the specific analytical method is to be used, cleanup goal, target reporting limit, and QA objectives (precision and accuracy);

- A definition and discussion of the expected degree of data completeness, representativeness, and comparability; and
- For each analytical parameter, the number of test samples to be collected daily and for each campaign, number of quality control (QC) samples (for example, blanks) to be collected daily and for each campaign, and the total number of samples (including QC samples) to be collected daily for each campaign. This information will provide a uniform basis for evaluating the adequacy of the proposed sampling program.

This table was also compared to the more detailed sampling and analysis presentation in the "Project Specific Plan for Operable Unit 4, Vitrification Pilot Plant Phase I Process Sampling," Fernald Environmental Restoration Management Corporation, 1995 (FERMCO 1995), and numerous discrepancies were found. Examples of these discrepancies are provided below:

- Tests have been added or deleted for sampling ports S3, S4, S5, S6, S7, S14, S16, and S17. For some added tests, such as those for sulfate and nitrate, the necessary sample containers, preservatives, holding times, analytical methods, and other details can be determined from listings for other sampling ports. However, these details are missing from some critical tests, such as particle size distribution for samples from sampling ports S3, S5, S14, and S16.
- Sampling port S21 on the surge tank has been deleted.
- Several terms used in this table are misleading. For example, the table indicates that samples collected at sampling ports S1, S12, and S17 will be analyzed for total metals. However, FERMCO 1995 states that the samples collected from these ports will be analyzed only for barium and lead, which is adequate for determining whether the sampled waste stream is hazardous but inadequate for characterizing the waste. Also, according to this table, the bulk density test will be used for samples from sampling port S10 to determine the specific gravity of the glass product, while the specific gravity test will be used to determine the bulk density of the glass product in shipping drums.

The discrepancies between this table and other relevant documents, including FERMCO 1995, should be corrected.

In addition, use of several additional sample analyses would better characterize the VITPP's performance. For example, additional samples should be collected from sampling port S6 and analyzed for acidity and alkalinity to better monitor removal of acid gases. Furthermore, although the radon monitor will not be used until Phase II, it should be tested during Phase I. The work plan should be revised to address these issues.

Response: The information requested is in the Project Specific Plan (PSP), Rev. 1.

Action: The additional information requested has been added to the Work Plan, and the discrepancies between the Work Plan and the PSP have been addressed.

Commenting Organization: U. S. EPA Commentor: Saric
 Section #: 6.4 through 6.11 Page #: 6-13 through 6-15 Line #: NA
 Original Specific Comment #: 15

Comment: These sections pertain to analytical methods; DQOs; ASLs; QA requirements; data reduction, verification, and quantification; performance and system audits; calculations of data quality indicators; corrective action; and QA reports to management. However, the work plan discusses these items in very general terms and often cites one of several QA plans for further details. These general discussions and citations of other documents impede review and evaluation of these sections. The relevant information in the QA plans cited should be summarized and presented in this work plan.

Response: Additional information providing more detail for sections discussing the Data Quality Objectives (DQO), Analytical Support Levels (ASL), and data reduction will be provided. Complete information is provided in the QA plans.

Action: Summary level information will be added to the necessary sections.

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 7.0 Page #: 7-1 Line #: NA
 Original Specific Comment #: 16

Comment: This section discusses data management for data and records generated during VITPP Phase I testing. However, this section frequently cites the sitewide QA plan and general project record management requirements. To make the work plan easier to review and evaluate, the relevant portions of the sitewide QA plan and record management requirements should be summarized in the work plan, and any forms should be included in an appendix.

Response: Field and Lab data packages will be reviewed in accordance with the SCQ.

Action: Additional information will be added to this section.

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 8.0 Page #: 8-1 Line #: NA
 Original Specific Comment #: 17

Comment: This section discusses data analysis and interpretation. However, this section does not provide specific procedures for data analysis and interpretation. Such procedures should be described in this section.

In addition, this section states that data validation personnel will validate only ASL B plus data packages. Under this approach and based on the information presented in Section 3.3, only total and toxicity characteristic leaching procedure metals data

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 10.1 Page #: 10-2 Line #: 6 through 27
 Original Specific Comment #: 19

Comment: This section lists waste streams that will be generated during the VITPP testing program. This list is incomplete. Missing wastes include building sump effluent, cooling tower blowdown, and used desiccant. This list should be revised to include all the waste streams.

Response: The listing on page 10-2 consists of wastes that require characterization via procedure EW-0001 or EW-0006. These procedures cover, respectively, MEFs (for containerized waste from production) and CWIDs (for containerized waste from construction). They do not apply to liquid effluents in pipelines such as building sump effluent, cooling tower blowdown and spent desiccant solution, which become process wastewater and are sent to the AWWT for treatment.

Action: None

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: 13.3 Page #: 13-3 Line #: 13-1
 Original Specific Comment #: 20

Comment: This table outlines the proposed organization of the VITPP testing final report. Section 2.0 of the final report, Conclusions and Recommendations, should include sections describing how this testing program relates to future work at Operable Unit 4 (OU4).

Response: Agree.

Action: Discussion will be added to the report to identify the anticipated or scheduled OU4 work activities in relationship with the recommendations of phase I treatability study.

Commenting Organization: U.S. EPA Commentor: Saric
 Section #: Appendix B Page #: NA Line #: NA
 Original Specific Comment #: 21

Comment: This appendix lists applicable or relative and appropriate requirements (ARAR) and criteria to be considered. Comparison of this list of ARARs and criteria to be considered with the list in Table B.1-3 of the record of decision revealed the following omission in the appendix: 40 Code of Federal Regulations 264, Subpart F, Releases from Solid Waste Management Units.

The missing ARAR should be added to the appendix or the reason for excluding it should be provided.

Response: 40 CFR § 264 Subpart F was identified as a "relevant and appropriate" requirement for Alternative 2C, Demolition, Removal, On-Property Disposal of Silo Superstructures Earthen Berm, Decant Sump Tank, Process Piping, etc., in the approved ROD. The ROD did not identify the requirement as an ARAR for vitrification operations.

The requirement was identified as an ARAR for Alternative 2C for management of the identified material in the proposed on-site disposal cell. No on-site disposal cells are associated with pilot plant operations. In addition, the pilot plant has not been identified as a SWMU or HWMU. The pilot plant will not be a land disposal facility that must comply with the requirements of 40 CFR Part 264 Subpart F. As a result, 40 CFR § Subpart F has not been identified as an ARAR nor a TBC for pilot plant operations. However, it should be noted that the Pilot Plant will be demolished and decontaminated in accordance with ARARs and TBCs identified for Alternative 2C, in the approved ROD, during final remediation activities. Existing monitoring wells in the vicinity of the silos will be retained for groundwater monitoring following remediation.

Action: No action.