Supplemental Analysis - no e-file

DOE/EIS-0195-SA-02

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memorandum

Ohio Field Office

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DATE: August 20, 1996

REPLY TO ATTN OF: OH:Smiley

SUBJECT: **APPROVAL OF NEPA SUPPLEMENTAL ANALYSIS FOR PROPOSED SILO 3 ALTERNATIVES AT THE FEMP**

TO: Jack R. Craig, Director, FN

As requested by Ed Skintik and Nina Akgunduz of your staff, the NEPA Compliance Officer (NCO) has completed her review of the *Evaluation of Silo 3 Alternatives* (Draft Final dated June 1996) and determined that the proposed alternatives do **not** constitute a substantial change in project scope, **or** result in the availability of significant new information related to environmental impacts, from the original alternatives evaluated in the OU4 FS/PP-EIS (ROD issued December 7, 1994). Therefore, a Supplemental EIS (SEIS) is **not** required for the proposed alternatives.

This decision is consistent with DOE's NEPA Regulations which require the preparation of a "Supplemental Analysis" where the decision to prepare a SEIS is unclear (10 CFR 1021.314). The Supplemental Analysis should discuss the changed or new circumstances that are pertinent in determining whether or not to prepare a SEIS. The discussion should contain sufficient information for DOE to determine whether a SEIS, new EIS, or no new NEPA documentation is required. I believe that the *Evaluation of Silo 3 Alternatives* document satisfies this requirement under NEPA for a Supplemental Analysis. As you may recall, I reached a similar decision on January 9, 1996, when I approved a Supplemental Analysis to the OU4 FS/PP-EIS that evaluated shipping Silo 3 materials for disposal via truck only. Shipment via truck (as opposed to the combination of rail/truck evaluated in the original EIS) resulted in a modest cost savings to the project while providing an equivalent level of protection for human health and the environment.

My decision regarding the *Evaluation of Silo 3 Alternatives* document is also consistent with the Secretary's June 1994 Policy on NEPA that allows for the procedural aspects of NEPA to be addressed by the CERCLA process for CERCLA actions, so long as the substantive aspects of NEPA are carried out. It is important to note that these "substantive aspects" include the opportunity for public review and comment on the proposed alternatives for Silo 3

residues. As stated in the "Purpose and Need" section of the *Evaluation of Silo 3 Alternatives* document, stakeholder input into the selection of the "preferred alternative," through the solicitation of community and state agency comments, will be incorporated into an assessment of the alternatives against the two modifying criteria (for state and community acceptance) in the EPA's National Contingency Plan. It is my understanding that a Public Workshop is being conducted **today** at the FEMP to satisfy the public participation requirements under CERCLA and NEPA.

I **commend** the efforts of your staff and the staff of FERMCO to re-examine and determine whether specified alternatives would simplify the implementation of the technical requirements for the remediation of the Silo 3 residues, accelerate the project schedule and/or reduce the remediation costs, while providing an equivalent or improved level of protection for human health and the environment. More specifically, the alternative stabilization of Silo 3 residues creates a significant opportunity to accelerate both the remediation of Silo 3 residues by approximately 24 months and the overall remediation of OU4 by nine months, at no additional cost to the project. Such process efficiencies move us one step closer to our "Vision 2005" for the Ohio Field Office!

Should you have any questions on my decision to approve the above subject Supplemental Analysis, please contact Sue Smiley, NCO, at (513) 865-3987.

Nat Brown
for J. Phil Hamric
Manager

cc:
Ed Skintik, FN
Nina Akgunduz, FN
Yardena Mansoor, EH-42

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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MAR 31 1998

Mr. Johnny W. Reising
United States Department of Energy
Feed Materials Production Center
P.O. Box 398705
Cincinnati, Ohio 45239-8705

REPLY TO THE ATTENTION OF SRF-5J

Subject: Final Explanation of Significant Differences for Operable Unit 4 Silo 3 Remedial Action

Dear Mr. Reising:

The United States Environmental Protection Agency (U.S. EPA) has reviewed the above-referenced document (ESD) as part of its oversight activities for the United States Department of Energy (U.S. DOE) Fernald Environmental Management Project. The ESD, dated January 1998, was provided to U.S. EPA on February 17, 1998. Consistent with the July 22, 1997 Dispute Settlement Agreement, this ESD was prepared to document the change in remedy for treatment and disposal of Silo 3 material.

A Record of Decision for Operable Unit 4 (OU4) was signed on December 7, 1994 identifying on-site vitrification and off-site disposal at the U.S. DOE Nevada Test Site (NTS) as the selected remedy for remediation of the silo materials. Difficulties with vitrification lead to the decision that treatment of Silo 3 material should be implemented separately from treatment of Silo 1 and 2 material, and further that an alternate remedy should be considered for treatment and disposal of Silo 3 material. In summary, the alternate remedy for remediation of Silo 3 material is defined as: 1) treatment using either chemical stabilization/solidification or a polymer-based encapsulation process to stabilize characteristic metals to meet RCRA TCLP limits and attain disposal facility waste acceptance criteria; and 2) off-site disposal at either the NTS or an appropriately-permitted commercial disposal facility.

U.S. EPA concurs with this change in remedy and signed the ESD on March 27, 1998. In accordance with the July 22, 1997 Dispute Settlement Agreement, a revised Remedial Design Work Plan for Silo 3 Remedial Action is to be submitted to U.S. EPA within 60 days of signature of this ESD. Please contact me at (312) 886-4591 if you have any questions.

Sincerely,

E Jablonowski

Gene Jablonowski
Remedial Project Manager
Federal Facilities Section
SFD Remedial Response Branch #2

Enclosure

cc w/o attachments:
Tom Schneider, OEPA-SWDO
Bill Murphie, U.S. DOE-HDQ

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FINAL

EXPLANATION OF SIGNIFICANT DIFFERENCES for OPERABLE UNIT 4 SILO 3 REMEDIAL ACTION at the FERNALD ENVIRONMENTAL MANAGEMENT PROJECT FERNALD, OHIO

40400-RP-0004

REVISION 0

JANUARY 1998

planning period. DOE-NV. Funding for closure of the NTS, will have to be requested from congress at the appropriate time . DOE-FEMP will, if requested, assist DOE-NV in justifying and obtaining necessary funding.

5. AFFIRMATION OF STATUTORY DETERMINATION

Changing the stabilization/solidification process for Silo 3 materials from vitrification to Chemical Stabilization/Solidification, or a Polymer-based Encapsulation process, followed by off-site disposal, does not fundamentally alter the remedy selected in the approved OU4 ROD. The alternate remedy will effectively immobilize the heavy metals present in the material to reduce the leachability and associated toxicity of the material and in order to meet RCRA TCLP limits and the disposal facility WAC. In addition, the alternative provides for disposal of treated waste at a protective off-site disposal facility after stabilization/ solidification. As discussed in Section 3.4, either type of treatment process can attain the RAOs specified by the OU4 FS and ROD for Silo 3 material. Treatment, using either of the identified treatment technologies, at an off-site location can also attain all of the Silo 3 RAOs, provided that the risk during transportation to the treatment facility is maintained less than 1×10^{-6} through on-site pretreatment to reduce dispersability and packaging in accordance with DOT regulations.

The NTS and representative PCDFs are located in remote, arid regions of the western United States so that human health and environmental impacts are similar for both facilities. Changing the selected remedy for Silo 3 materials from vitrification to either of the potential alternatives will not result in any changes to the ARARs identified in the approved OU4 ROD. Treatment of Silo 3 materials using either Chemical Stabilization/Solidification or a Polymer-based Encapsulation process will comply with all ARARs identified in the approved OU4 ROD. Off-site treatment of Silo 3 material, using either type of technology, can also attain all ARARs, provided that transportation risk is minimized as discussed above.

In order to meet the substantive and procedural requirements of the DOE's NEPA Implementing Regulations (10 CFR 1021), the OU4 FS and Proposed Plan (PP) were prepared as an integrated NEPA Environmental Impact Statement (EIS). The DOE's NEPA regulations mandate that proposed changes to a federal action which has been the subject of an EIS evaluation, must be evaluated in a Supplemental Analysis to determine if formal revision to the original EIS is required through issuance of a Supplemental EIS. A Supplemental Analysis (Reference 20) was prepared to evaluate the NEPA impacts of the proposed changes in the Silo 3 stabilization technology and potential changes in the final disposal location. The Supplemental Analysis concluded the proposed change in treatment technology and the potential change in the disposal location were sufficiently evaluated in the original OU4 FS/PP-EIS and did not require the preparation of a Supplemental EIS. The Silo 3 Supplemental Analysis was made available for stakeholder review and approved by the DOE-Ohio Field Office NEPA Compliance Officer and placed in the PEIC in December of 1996 pursuant to the requirements of the DOE's NEPA regulations regarding public availability.

6. PUBLIC PARTICIPATION

Public participation played an integral role in reevaluating the remedy for remediation of Silo 3 material. Formal public involvement opportunities during identification of the alternate remedy for Silo 3 material and development of this draft Final ESD are summarized in Table 12.

A draft ESD was reviewed and approved by both U.S. EPA and Ohio EPA (References 21-25). A draft Final ESD (Reference 26) was made available for public review from November 17, 1997 through December 16, 1997. Formal public hearings were held at the FEMP on November 25, 1997, and at the NTS on December 2, 1997 to receive stakeholder comments and concerns. A responsiveness summary document, which formally addresses stakeholder comments received on the draft Final ESD, is contained in Section 4.

EPA, "U. S. Environmental Protection Agency October 2, 1996 Nonconcurrence with Extension Request and Notice of Intent to Assess Stipulated Penalties," October 9, 1996

13. U.S. EPA 1997, "Agreement Resolving Dispute Concerning Denial of Request for Extension of Time for Certain Operable Unit 4 Milestones," United States Environmental Protection Agency Region V, Administrative Docket Number V-W-90-C-057, July 22, 1997
14. "Encyclopedia of Technologies," 1992
15. U.S. EPA 1996, "Stabilization/Solidification Processes for Mixed Waste"
16. Literature Survey of "Innovative Technologies for Hazardous Waste Site Remediation," 1987-1991
17. U.S. EPA 1994, "Fifth Forum on Innovative Hazardous Waste Treatment Technologies: Domestic and International"
18. U.S. EPA 1993, "Remediation Technologies Screening Matrix and Reference Guide"
19. U. S. NRC 1989, "Workshop on Cement Stabilization of Low-Level Radioactive Waste"
20. DOE 1996, "Draft Final Evaluation of Silo 3 Alternatives Volume 2 of 2 Revision B, Appendix F 'NEPA Supplemental Analysis'," December 16, 1996
21. DOE 1997, letter DOE-1330-97, Johnny Reising, DOE to James A. Saric, U. S. EPA and Tom Schneider, Ohio EPA, "Draft Explanation of Significant Differences (ESD) for Operable Unit 4 Silo 3 Remedial Action," dated September 12, 1997
22. OEPA 1997, letter, Tom Schneider, Ohio EPA to Johnny Reising, DOE, "Conditional Approval - OU4 Silo 3 ESD Draft Final Comments," dated September 22, 1997
23. U.S. EPA 1997, letter, Gene Jablonowski, U.S. EPA to Johnny Reising, DOE,"Silo 3 ESD Disapproval," dated October 16, 1997
24. DOE 1997, letter DOE-0099-98, Johnny Reising, DOE to Gene Jablonowski, U. S. EPA and Tom Schneider, Ohio EPA, "Response to Ohio Environmental Protection Agency and United States Environmental Protection Agency Comments on Draft Explanation of Significant Differences (ESD) for Operable Unit 4 Silo 3 Remedial Action," dated October 28, 1997
25. U.S. EPA 1997, letter, Gene Jablonowski, U.S. EPA to Johnny Reising, DOE, "Silo 3 ESD Approval," dated November 5, 1997
26. DOE 1997, "Draft Final Explanation of Significant Differences (ESD) for Operable Unit 4 Silo 3 Remedial Action," dated November 6, 1997

APPENDIX F

NEPA SUPPLEMENT ANALYSIS

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ACRONYM LIST

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DOE	United States Department of Energy
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
FEMP	Fernald Environmental Management Project
FS/PP-EIS	Feasibility Study/Proposed Plan-Environmental Impact Statement
NEPA	National Environmental Policy Act
NTS	Nevada Test Site
OU	operable unit
ROD	Record of Decision
RPCDF	representative permitted commercial disposal facility
SEIS	Supplemental Environmental Impact Statement

APPENDIX F

F.1.0 NEPA Supplement Analysis

F.1.1 Requirements for Conducting a Supplement Analysis

This Appendix provides an evaluation of the alternatives being considered for the remediation of the Silo 3 residues and a recommendation as to the appropriate level of National Environmental Policy Act (NEPA) evaluation required for the action. The remediation of the Fernald silos (including Silo 3) was evaluated in the Operable Unit 4 (OU4) Feasibility Study/Proposed Plan-Environmental Impact Statement (FS/PP-EIS) which was approved by United States Department of Energy (DOE) and United States Environmental Protection Agency (EPA) through the issuance of a Record of Decision (ROD) on December 7, 1994.

After issuance of the ROD, it was determined that a modest cost savings could be achieved by shipping material for disposal via truck as opposed to the combination of rail/truck evaluated in the OU4 FS/PP-EIS. Therefore, a Supplement Analysis to the original EIS was prepared and approved on January 9, 1996 by DOE concluding that preparation of a full Supplemental Environmental Impact Statement (SEIS) was not required.

The following provides a second Supplement Analysis to the OU4 FS/PP-EIS for the revised alternatives being considered for Silo 3.

F.1.1.1 Council on Environmental Quality Regulations (40 CFR 1500) and DOE Regulations (10 CFR 1021)

There are two relevant regulations dealing with the decision whether or not to prepare a SEIS. These regulations are the Council on Environmental Quality's (CEQ's) NEPA implementation regulations (40 CFR 1500) and the DOE's NEPA implementing regulations (10 CFR 1021).

F.1.2 Evaluating Proposed Changes

Both the CEQ and DOE regulations require an agency to prepare a SEIS where the agency has made a substantial change in a proposed action, or if there are new significant circumstances in the proposed EIS action that are relevant to environmental concerns. The agency may also prepare a SEIS if the agency determines that the purposes of NEPA would be furthered by the supplement.

In addition, the DOE NEPA regulations require the preparation of a "Supplemental Analysis" where

the decision to prepare a SEIS is unclear (10 CFR 1021.314). The Supplement Analysis should discuss the changed or new circumstances that are pertinent in determining whether or not to prepare a SEIS. The discussion should therefore contain sufficient information for DOE to determine whether a SEIS, new EIS, or no new NEPA documentation is required.

F.1.3 Applying "Rule of Reason"

It is inevitable that new information is learned after the finalization of an EIS, and NEPA case law confirms that an agency does not need to supplement an EIS every time new information comes to light. The agency should however, take a hard look at the environmental impacts of its planned action. It should apply a "rule of reason" in deciding whether or not to prepare a SEIS.

In applying this rule of reason, the agency should evaluate factors related to the new information or circumstances for the action. These factors might include the environmental significance of the new information or circumstances; its probable accuracy; the care that the agency used to evaluate the information and its impact; and the degree to which the agency supports its decision to prepare or not prepare a SEIS.

F.1.4 Approval of Supplement Analysis and SEIS by DOE

If a Supplement Analysis is developed to determine whether or not to prepare a SEIS, this information should be made available to the public for information. If the Supplement Analysis supports the decision to supplement the original EIS, DOE must meet the same requirements for filing an EIS (e.g., preparing a Record of Decision). One exception here is that the public scoping requirements are optional if the scope of the proposed action has not changed from the original EIS.

F.2.0 Evaluation of Alternatives

F.2.1 Onsite Vitrification - Off-site Disposal at the NTS (VIT)

This alternative would involve combining cold metal oxides from Silo 3 with residues from Silos 1 and 2 and treating them through vitrification. This process would involve constructing a feed preparation system to prepare and deliver a feed slurry containing both silo residues and glass-formers to the melter. The vitrification process would include a nominal 25-ton per day joule-heated melter and would be constructed in conjunction with the melter feed system immediately east of the silos. A melter off-gas system would mitigate the potential for an unplanned release of contamination and the treatment of effluent gases. This alternative would involve the packaging, loading and shipping of stabilized material to a waste disposal site at the Nevada Test Site (NTS) via truck. A detailed discussion of this alternative is available in Section 3.2.1.

The treatment and disposal aspects of this alternative were fully evaluated in the original Operable Unit 4 FS/PP-EIS. In addition, transportation of silo residues to the NTS via the truck scenario was evaluated in a Supplemental Analysis to the OU4 FS/PP-EIS which was approved by DOE on January 9, 1996. This alternative does not represent a significant change in scope from what was evaluated in the OU4 FS/PP-EIS.

Potential environmental impacts including human health risks are consistent with those evaluated in the original EIS. Impacts would be limited because the project would be carried out in previously disturbed areas with the appropriate engineering controls employed. Short- and long-term human health risks associated with this alternative to both workers and the public would fall within the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) target risk range of 10^{-4} - 10^{-6}. This includes risks associated with transportation and disposal of the material. A full discussion of the potential environmental impacts is included in Sections 3.2.4 and 3.2.6.

F.2.2 Onsite Stabilization - Off-site Disposal at the NTS (ALT1)

This alternative would involve the same removal process for the Silo 3 residues as VIT (Section 3.2). A treatment facility constructed on-property would house the process for stabilization. The process would involve mixing the Silo 3 residues with portland cement and blast furnace slag, placing the stabilized material in containers and transporting the material to the NTS for disposal (Section 3.3). Four boxes would be carried on each truck load and approximately 540 truck shipments would be required to transport the stabilized material to the NTS.

The stabilization of the silo residues with cement and disposal of the residues at the NTS was discussed in the OU4 FS/PP-EIS. Consistent with the previous alternative, transportation of the silo residues to the NTS via the truck scenario was evaluated in a Supplemental Analysis.

F.2.3 Onsite Stabilization - Off-site Disposal at a RPCDF (ALT2)

This alternative would involve the same removal process for the Silo 3 residues as VIT (Section 3.2). Stabilization would be accomplished by thoroughly mixing the Silo 3 residues with portland cement and blast furnace slag. An engineered metal sided building would be constructed in the previously disturbed area east of the silos which would house the stabilization operations. Stabilized residues would be loaded into containers and loaded onto trucks. An estimated 504 truck shipments would be necessary to transport all of the stabilized material to the RPCDF.

The use of cement to stabilize the Silo 3 residues was evaluated in the OU4 FS/PP-EIS. The truck transportation alternative was evaluated in the aforementioned Supplemental Analysis. Therefore, nothing in this alternative would represent a change in scope from the initial OU4 FS/PP-EIS and Supplemental Analysis.

Though not evaluated in the OU4 FS/PP-EIS, the geology and climate of the Representative Permitted Commercial Disposal Facility (RPCDF) are sufficiently similar to those of the NTS. Therefore, human health risks and potential environmental impacts resulting from disposal of treated Silo 3 residues at the RPCDF should be similar to those evaluated for the NTS in the OU4 FS/PP-EIS. There would be no unacceptable short-term or long-term risks associated with this alternative as discussed in Sections 3.4.3 and 3.4.5. Potential environmental impacts at the FEMP site would be minimal as the action would be carried out in previously disturbed areas with appropriate engineering controls. The geology and climate of the representative permitted commercial disposal facility (RPCDF), in conjunction with specific engineering controls required for the facility, would prevent long-term impacts at the site, assuming proper maintenance.

F.2.4 Off-site Stabilization and Disposal at a RPCDF

This alternative would be very similar to the previous alternative except that Silo 3 residues would be "conditioned" for transportation utilizing a mixture of silicite and water. Final treatment of the material would occur at the RPCDF prior to disposal (Section 3.5). Although this alternative was not specifically evaluated in the FS/PP-EIS, it is so similar to the cementation alternative (e.g., mixing

would take place in a metal sided building as a batch operation) that this alternative would not represent a significant new action.

Human health risks and environmental impacts associated with this alternative are discussed in Sections 3.5.3. and 3.5.5. Risks and impacts associated with this alternative would be very similar to the previous alternative, therefore, no significant new information related to environmental impacts would be associated with this alternative.

F.2.5 Onsite Blending with OU1 Waste Pit 5 Material - Off-site Disposal at a RPCDF

Under this alternative, Silo 3 residues would be removed and stored in the OU1 area near the process intended to "blend-dry" waste pit material. The process would involve blending the Silo 3 residues with OU1 Waste Pit 5 material, segregating the waste based on size, reducing the size of material through drying, and managing debris associated with the material. A waste loadout and storage area would be in place to transfer dried materials into rail cars. The material would then be transported to the RPCDF via rail. A detailed description of this alternative is provided in Section 3.6.

The drying and segregation of the Waste Pit Area material was evaluated in the OU1 FS/PP-NEPA evaluation. The OU1 FS/PP was not a formal EIS; however, NEPA values were incorporated in the CERCLA FS/PP pursuant to DOE's revised policy on NEPA issued in June of 1994. Although the evaluation in the OU1 FS/PP did not specifically consider the Silo 3 residues, blending of the Pit 5 material with the Silo 3 residues would not result in a significant change in the scope of the original alternative.

Human health risks and potential environmental impacts are evaluated in Section 3.6.1. There are no unacceptable risks associated with this alternative. Transportation risks are less than those for disposal at the NTS because the waste can be sent in bulk via rail. Environmental impacts associated with this alternative would be minimized due to the location of activities at the Fernald Environmental Management Project (FEMP) site and the use of engineering controls. The RPCDF impacts would be similar to those discussed in previous alternatives.

F.3.0 Conclusion

As required under the DOE NEPA regulations, DOE has conducted this Supplemental Analysis to determine whether or not a SEIS needs to be conducted for the revised Silo 3 alternatives. Based upon the results of this analysis, DOE has determined that the proposed Silo 3 alternatives do not constitute a substantial change in project scope or result in the availability of significant new information related to environmental impacts from the original EIS alternatives. Therefore, a SEIS is not recommended for the proposed alternatives.