

A Synopsis of NRC Comments and Unresolved Issues On:

"Final Environmental Impact Statement  
for Long-Term Management of Liquid High-Level  
Radioactive Waste Stored At the  
Western New York Nuclear Service Center,  
West Valley," (DOE/EIS-0081)

June, 1982

In July, 1981, the U. S. Department of Energy (DOE) published a draft Environmental Impact Statement (EIS) for "Long-Term Management of Liquid High-Level Radioactive Wastes Stored At the Western New York Nuclear Service Center, West Valley." The Division of Fuel Cycle and Material Safety, the Division of Waste Management, the Division of Safeguards and Brookhaven National Laboratory (under contract) reviewed the draft EIS. On October 10, 1981, the NRC met with the DOE and their principal contractor (Argonne National Laboratory) to discuss our preliminary comments on the draft EIS. Our formal comments were sent to the DOE on October 30, 1981.

The NRC received a proposed version for the final EIS on May 14, 1982. After reviewing the proposed version we informally requested that the DOE make some additional revisions which were not included in our formal comments. These informal comments were noted in a June 1, 1982 memo to Regis Boyle.

On July 6, 1982 we received the final EIS. This review will highlight the major differences between the draft and final EIS. It will also examine how well the DOE responded to the NRC formal comments on the draft EIS and informal comments on the proposed final EIS.

The final EIS differs from the draft EIS in the following ways:

1. The final EIS shows a liquid effluent from the LLW treatment facility where the draft EIS did not. This additional effluent (primarily tritiated water) did not affect the radiological impacts. The DOE explained that the calculated population doses were the same with or without the liquid discharge.

With the addition of a liquid discharge, the NRC informally requested that the final EIS discuss the quality and quantity of the effluent from the LLW treatment facility. In response to our request, table 4.3 in final EIS shows release fractions for both liquid and gaseous effluents. Release fraction is defined as the ratio of the radioactivity released to the total radioactivity from the source.

In appendix B of the final EIS (p. B-60), the description of the LLW treatment facility has not changed from the draft EIS. There is no description of the quality and quantity of the effluent nor does the final EIS evaluate the radiological and non-radiological impacts on the receiving body of water.

2. Unlike the draft EIS, the final EIS will not support a decision on the disposition of LLW generated at West Valley. The DOE will make this decision after the USGS completes their investigations at West Valley and after the Savannah River Plant (SRP) develops a leach-resistant form for the nitrate salt cake. In our comments on the draft EIS, the NRC stated that the environmental impacts of LLW disposal were not examined in sufficient detail to permit a decision to be made in this matter. Consequently, we were pleased that the DOE had decided not to make a decision on LLW disposal until on-going investigations have been completed.
3. The final EIS selected a preferred alternative, 1A (terminal form with separated salt/sludge). This process will result in about 300 canisters of HLW as compared to alternative 1b (terminal form with non-separated salt/sludge) which would have resulted in 1300

canisters. Accordingly, repository impacts will be less for the preferred alternative.

The final EIS credits Savannah River and Pacific Northwest Laboratories with the primary responsibility for developing borosilicate glass as the terminal waste form. The DOE has informally told us that the waste form program at West Valley would closely track that at Savannah River. Yet the final EIS does not show any coordination between the two programs. In fact, the vitrification process proposed for West Valley (alternative 1a) is not the same as the one proposed for Savannah River.

Savannah River will use a liquid feed ceramic melter where West Valley will convert the sludge component into calcine before vitrification. The final EIS for West Valley discusses a liquid-feed process whereby the sludge, supernatant and thorex waste would be combined and vitrified together. This process, called non-separated salt/sludge (alternative 1B), would not segregate out the nitrate salts as would the Savannah River process.

Also, West Valley must vitrify 47,000 L of acidic thorex waste which is not present at Savannah River. Pacific Northwest Laboratories is investigating the solubility of thoria (oxydized thorium) in borosilicate glass to determine "whether the thorium present at West Valley might be incorporated into waste glass, or whether alternate treatment should be considered."<sup>1</sup> Hence, it is possible that two waste forms may be produced at West Valley; one for the neutralized wastes and one for the acidic thorex waste.

The final EIS states that the DOE will prepare a NEPA document for the selection of a waste form (p. B-20). The DOE has informally told us that this NEPA document would be tiered upon the environmental assessment which is being prepared for the selection of a waste form that will be produced at the Defense Waste Processing Facility at Savannah River. Given the discrepancies in vitrification processes along with the different waste inventories, we do not see how an environmental document prepared for West Valley could be tiered upon the environmental assessment being prepared for Savannah River.

4. The final EIS states that the DOE prefers to modify the existing facilities at West Valley rather than building new ones. It adds, on page B-57, that either option would have the same total impact.

West Valley Nuclear Services Company has conducted a facility utilization study which will determine whether or not the existing chemical processing cell (CPC) will be used. Although we have not seen the study, the DOE has told us that it recommends building a new CPC because of the uncertainties associated with decontaminating the existing CPC.

Before the existing CPC could be used, more than a hundred thousand gallons of decontamination solution would be needed to reduce exposures to 10 mr/hr. At this level, workers could have relatively unrestricted access. Destructive decontamination of the same cell would not involve such a tremendous volume of decontamination solution. From these discussions we must conclude that building a

new facility would not have the same total impact as using the existing facility, as stated in the final EIS.

5. The affected environment section in the final EIS describes West Valley's geologic and hydrologic features in greater detail than did the draft EIS.
6. Compliance with the West Valley Demonstration Project Act was added to the list of institutional issues in the final EIS. Only alternative (1) would comply with the act. The final EIS also identified the Savannah River Plant as the federal waste facility that would convert the interim waste form (alternative 2) to a terminal waste form.

On page 4-71 the final EIS states why the interim waste form (alternative 2) would not comply with the WVDPA;

"Alternative 2 would not comply (with the West Valley Demonstration Project Act) because the West Valley facilities would not be used for preparing the wastes for disposal; they would be used only for preparing the wastes to an interim form for shipment and later offsite preparation for disposal."

It is not clear why the final EIS even called alternative 2 (agglomerated calcine) an "interim waste form" when it is listed in appendix B (p. B-18) among the "terminal waste forms" currently being developed. In addition, a number of commenters noted that agglomerated calcine has an advantage over borosilicate glass in

that it could be converted into another form, perhaps superior to borosilicate glass, at a later date.

The above revisions along with direct responses to NRC comments, appearing in appendix H, responded to most of our concerns. There still remains, however, some unresolved issues. These will be discussed below:

As noted in the review of the text revisions, the final EIS does not depict a vitrification process which parallels that at Savannah River. This suggests a lack of coordination between the two programs and could result in two, very different terminal waste forms. The review also noted that the final EIS understates the difference in environmental impacts between using the existing facilities at West Valley or building new ones.

In our formal comments on the draft EIS, we asked the DOE to identify, examine and compare alternative containers suitable for permanent disposal of high-level radioactive waste solidified at West Valley. In subsequent informal discussions, the DOE stated that this information was not available. We therefore recommended that the final EIS include the selection of a HLW canister among the decisions to be made later. The final EIS did not adopt our recommendation. It did, however, add one sentence in appendix B (p. B-24) which states:

"If steel should prove to be incompatible with the repository medium that is selected for the wastes, the canisters would be provided with suitable overpacks."

Eight of the forty comment letters on the draft EIS made an issue of the DOE's selection of a final waste form without knowing where the waste will be disposed of. The DOE responded by stating that the EIS assumed that a terminal waste form can be selected prior to the selection of a waste repository and that overpacks would remedy any incompatibilities between the waste form and the host environment. (p. H-11 and p. H-33). [The Environmental Assessment for the "Waste Form Selection for SRP High-Level Waste," July, 1982,<sup>2</sup> has taken a similar stand by stating that borosilicate glass is compatible with a full range of repository geologies (p. 1-3)]. The DOE is aware that the NRC technical criteria for HLW disposal (10 CFR 60) cannot be applied to individual components of the repository. Instead, the collective performance of the waste package, engineered and geologic barriers must be evaluated as a system. The DOE still believes that the borosilicate glass waste form will comply with 10 CFR 60 and states on page H-34 of the EIS:

"The Department will prepare a description and analysis of the extent to which the final waste form and containers complies with any NRC technical regulation (or proposed regulations) regarding disposal of high-level radioactive waste in geologic repositories."

According to the DOE master schedule for its activities at West Valley,<sup>3</sup> this analysis will be completed in October, 1982.

Despite several meetings with the DOE, we were never certain of what the purpose of the draft EIS was. The draft EIS stated that the basic decision being considered by the DOE was "whether to construct and operate facilities necessary to solidify the HLW stored at West Valley" (p. 1-3). We believed that this decision had already been made with the



passage of the West Valley Demonstration Project Act and the EIS would serve no purpose other than reinforcing what Congress had mandated by law.

The final EIS has stated its purpose more clearly:

"The Department will proceed with the design, construction and operation of facilities to process the wastes based on the reference borosilicate glass waste form and separated salt/sludge process" (p. 1-4).

This new wording may have expanded the scope of the EIS. What originally had been a decision on whether or not to solidify the wastes now includes the selection of a vitrification process with borosilicate glass as the reference waste product. Since a waste form other than borosilicate glass may be selected for the West Valley wastes, particularly the thorex waste, we do not see how the DOE could choose a vitrification process (e.g., facility design, construction and operation) at this time. Unfortunately, we cannot be certain what decision the West Valley EIS will support until the DOE publishes its Record of Decision in the Federal Register in August, 1982.

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References:

1. Commercial Waste Treatment Program Proposed West Valley Support (draft), Pacific Northwest Laboratories, May 25, 1982.
2. DOE/EA-0179, concurrence copy. Environmental Assessment Waste Form Selection for SRP High-Level Waste, July, 1982.
3. West Valley Demonstration Project Master Schedule (draft), U. S. DOE, June 2, 1982.