



Department of Energy

Washington, DC 20585

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Mr. John Linehan, Acting Director
Repository Licensing and Quality
Assurance Project Directorate
Division of High-Level Waste Management
Office of Nuclear Material Safety
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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Linehan:

On March 1, 1991, the U.S. Department of Energy (DOE) and the U.S. Nuclear Regulatory Commission (NRC) participated in a teleconference to discuss issues related to borosilicate glass as a waste form. During that teleconference, NRC expressed concern regarding the potential linkage between the Waste Acceptance Preliminary Specifications (WAPS) and the performance allocated to the glass waste form in the 1988 Site Characterization Plan (SCP). Pursuant to that teleconference, DOE conducted an evaluation to determine if there is such a linkage. The evaluation leads to a conclusion that the SCP does not establish a direct linkage between the WAPS and the tentative performance allocation to the glass waste form contained in the SCP. This conclusion is supported by the following observations:

1. As indicated in DOE's letter dated June 27, 1989, the vitrified high-level waste will, of necessity, be produced long before sufficient materials testing, site characterization and performance assessment can be accomplished to proceed with a license application, should the site currently under consideration be found suitable. DOE is responsible for accepting the glass waste form into the Waste Management System. The basis for acceptance is governed by the WAPS. Compliance with the WAPS assures that the Office of Civilian Radioactive Waste Management (OCRWM) has a clear definition of the characteristics and consistency of the glass product. WAPS allow the selection of input data for developing glass waste form degradation models, and are necessary to limit the classes of models that need to be developed. WAPS are not intended to be a measure of the glass waste form performance in the repository. For example, on page 8.3.5.10-35, the SCP states that "... the leach rates referenced in Specification 1.3 are not intended to be a measure of the glass waste form performance in the repository or to act as a source term for the performance of the engineered barrier system. This specification is intended to discriminate between well-made glasses and non-vitreous products that may result from variation in process feed composition...." With the information provided

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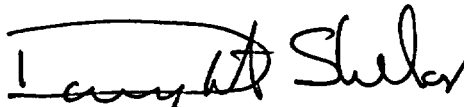
through the WAPS, a design, testing, model-development and performance assessment (PA) program can be defined and implemented that will provide assurance that this waste can be disposed of with full regulatory compliance.

2. Performance allocations contained in the 1988 SCP were, and are, only tentative allocations, intended to be a "starting place" for definition of design, testing, site-characterization and the PA program. These allocations will change as more is learned about the potential site, the waste forms and other materials, and their demonstrable performance in the waste package, and engineered barrier system (EBS) and total-system designs that will be developed in the future. The 1988 SCP documented available information and the OCRWM approach at that time. The OCRWM approach is expected to evolve as additional information is obtained and interpreted. Changes to the approach and the program will be reflected in the SCP Baseline document and will be reported to the public in the semiannual progress report.

3. The Mined Geologic Disposal System is responsible for the disposal of the glass waste form. The disposal function includes two subfunctions: to "process waste" and "isolate waste". Processing the waste includes the packaging and emplacement of waste to comply with the postclosure performance objectives specified in 10 CFR 60.112 and 60.113. These requirements are placed on the total system and the EBS, respectively, and not on the waste form. DOE has consistently taken the approach to produce high quality glass and not place primary reliance on the waste form from the standpoint of performance allocation. In the context of the multiple barrier system, the total repository performance may be relatively insensitive to waste form behavior. Therefore, a waste package and EBS design must be developed that incorporate the properties of the HLW glass and the resultant allocation of performance along with the other components of the EBS. At that time, a determination would be made as to whether some credit can be taken for the containment and isolation capabilities of the waste form. Meanwhile, compliance with the WAPS will ensure the quality of the glass waste form.

DOE is presently developing a revised WAPS for all vitrified high-level waste that will replace the present two producer-specific documents (DOE/RW-0260 and 0261). These two existing documents contain statements that strongly suggest a linkage to SCP performance allocation. The revised WAPS document will not have language in it that suggests that any of the prescribed WAPS testing addresses repository post-closure regulatory requirements or performance allocations. DOE plans to submit the revised WAPS to the Program Change Control Board to supersede the existing documents within the next few months.

Sincerely,



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