

November 12, 2014

Mr. Daniel Sullivan  
U.S. Department of Energy  
West Valley Demonstration Project  
10282 Rock Springs Road  
West Valley, NY 14171-9799

SUBJECT: WEST VALLEY MELTER PACKAGE APPLICATION – REQUEST FOR  
SUPPLEMENTAL INFORMATION

Dear Mr. Sullivan:

By letter dated October 16, 2014, you submitted an application for a special authorization for the West Valley Melter Package (WVMP). Staff performed an acceptance review of your application to determine if the application contains sufficient technical information in scope and depth to allow the staff to complete the detailed technical review.

This letter is to advise you that, based on our acceptance review, the application does not contain sufficient technical information. The information needed to continue our review is described in the enclosure to this letter. In order to schedule our technical review, this information should be provided by December 5, 2014. If the information described is not received by this date, the application may not be accepted for review.

If you have any questions regarding this matter, please contact me at (301) 287–0759.

Sincerely,

**/RA/**

Pierre Saverot, Project Manager  
Spent Fuel Licensing Branch  
Division of Spent Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 71-9797  
TAC No. L24959

Enclosure: Request for Supplemental Information

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DOCKET NO. 71-9797

REQUEST FOR SUPPLEMENTAL INFORMATION (RSI) FOR THE  
WEST VALLEY MELTER PACKAGE

- RSI-1 Provide the acceptance criteria applied to the thermal design of the West Valley Melter Package.

The applicant did not provide any applicable thermal or pressure limits. The only referenced temperature limit is the package surface temperature specified in 10 CFR 71.43(g). The applicant performed thermal analysis for both normal conditions of transport (NCT) and hypothetical accident conditions (HAC) with maximum temperatures and pressures reported in the Safety Analysis Report, SAR WVMP-01, dated October 2014. However, the staff is unable to determine the adequacy of these analyses because acceptance thermal design criteria are not provided.

The information is needed to demonstrate compliance with 10 CFR 71.71 and 71.73

- RSI-2 Provide adequate analyses that realistically or conservatively capture the heat transfer characteristics of the West Valley Melter Package during NCT and HAC.

The applicant's developed thermal model did not account for convection heat transfer in the 10-inch thick air space between the top surface of the concrete and the top container wall. This air space would provide additional cooling during NCT. However, during HAC it is not conservative to assume conduction only since the heat source from the 30-minute fire is on the outer surface and heat transfer by convection (and radiation) will result in higher temperatures in the internal components. See also RSI-1 for acceptance criteria of the design.

The information is needed to demonstrate compliance with 10 CFR 71.71 and 71.73

- RSI-3 Provide the temperatures of each of the containment boundary components during NCT and HAC, ensuring to specifically address each gasketed penetration.

Tables 3-1, 3-2, 3-5, and 3-6 of the application provide temperatures during NCT and HAC, but do not clearly address each of the containment boundary components, or specifically address each gasketed penetration of the containment boundary. The staff is unable to determine if the containment boundary will withstand the NCT heat and cold conditions, and the HAC thermal tests. See also RSI-1 for acceptance criteria of the design.

The information is needed to demonstrate compliance with 10 CFR 71.51(a), 71.71 and 71.73.

## Observations

1. Provide additional description of the containment boundary in Section 4.1.1 of the application, as well as show all of the containment boundary components and the containment boundary in Figure 4-3 of the application.

In Section 4.1.1 of the application, a list of each containment boundary component would assist in completely describing the containment boundary. In addition, all of the containment boundary components, containment penetrations, and the containment boundary (i.e., a dotted line) should be shown in Figure 4-3 of the application; this may necessitate multiple figures. Each of the containment boundary components should be shown and described on the licensing drawings.

This information is needed to demonstrate compliance with 10 CFR 71.33(a)(4).

2. Revise Section 4.1.4 of the application to show that it has been demonstrated that any combustible gases generated in the package during a period of one year do not exceed 5% (by volume) of the free gas volume in any confined region of the package.

Section 4.1.4 of the application states, "For hydrogen generation, the content can be assumed to have a G (H<sub>2</sub>) value of approximately 0 [molecules H<sub>2</sub>/100 ev] (reference 4-6)." Reference 4-6 includes multiple G values for various contents, it is not immediately clear which G value(s) is (are) being referenced to arrive at the approximate G value of 0. It is also not clear from the application how it was concluded based on the approximate G value of 0 that the combustible gases generated in the package during a period of one year do not exceed 5% (by volume) of the free gas volume in any confined region of the package. No credit should be taken for getters, catalysts, or other recombination devices.

This information is needed to demonstrate compliance with 10 CFR 71.43(d).

3. Provide further details and justification in Section 4.1.2 of the application to address if the package does not incorporate a feature intended to allow continuous venting during transport for the one-time shipment.

Section 4.4 of the application states the package was not designed to be leak-tight and cannot be leak-tested. Section 4.1.2 of the application also states the package includes five gasketed port penetrations and a bolted side door with a neoprene gasket. The statement in Section 4.1.2 of the application, "The package is not vented," does not provide an appropriate level of description and justification to determine if the package meets 10 CFR 71.43(h) based on the containment boundary description and the containment analysis approach in Chapter 4 of the application.

This information is needed to demonstrate compliance with 10 CFR 71.43(h).

4. Provide a summarization in Sections 4.4 and 8.1.4 of the application to address the testing, etc., performed in lieu of leakage rate testing for the one-time shipment.

Section 4.4 of the application states the package was not designed to be leak-tight and cannot be leak-tested. Section 8.1.4 of the application states, "Leakage tests are not applicable to the WVMP because there is no pressure vessel or other leak-testable boundary associated with the package." The statements in Sections 4.4 and 8.1.4 of the application do not provide an appropriate summarization of the testing, etc., that is performed in lieu of leakage rate testing.

This information is needed to demonstrate compliance with 10 CFR 71.51(a).

5. Provide a complete lifting and tie-down analysis of the package in accordance with 10 CFR 71.45 requirements.

The current lifting and tie-down analysis appears to be incomplete in that:

- a. The application has not demonstrated compliance with 10 CFR 71.45(a). As presented in Section 2.5.1, the upper corner impact limiters and the railcar securements could potentially be used as lifting devices.
- b. The 5g component of the required static force for tie-down devices, per 10 CFR 71.45(b)(1), was not explicitly included in the calculations.
- c. The application has not demonstrated compliance with 10 CFR 71.45(b)(2). As presented in Section 2.5.2, the upper corner impact limiters and the railcar securements could potentially be used as tie-down devices.

This information is needed to demonstrate compliance with 10 CFR 71.45.