



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

May 20, 2022

Mr. John A. Mullis II  
Acting Associate Principal Deputy Assistant Secretary  
Regulatory and Policy Affairs  
U.S. Department of Energy  
Office of Environmental Management  
1000 Independence Ave., SW  
Washington, DC 20585

**SUBJECT: UNITED STATES NUCLEAR REGULATORY COMMISSION TECHNICAL  
EVALUATION REPORT FOR THE DRAFT WASTE INCIDENTAL TO  
REPROCESSING EVALUATION FOR VITRIFIED LOW-ACTIVITY WASTE  
DISPOSED ONSITE AT THE HANFORD SITE (DOCKET NUMBER  
PROJ0736)**

Dear Mr. Mullis:

By letter dated April 24, 2020 (Agencywide Document Access and Management System (ADAMS) Accession No. ML20120A594), the U.S. Department of Energy (DOE) requested that the U.S. Nuclear Regulatory Commission (NRC) conduct a consultative review of its "Draft Waste Incidental to Reprocessing (WIR) Evaluation for Vitrified Low-Activity Waste (VLAW) Disposed Onsite at the Hanford Site, Washington," dated April 2020 (Draft WIR Evaluation for VLAW, ML20120A593). The DOE also provided the NRC with the "Performance Assessment for the Integrated Disposal Facility (IDF PA) Hanford Site, Washington" (ML22053A179) as well as other supporting documents to assist in the NRC's consultative review. The NRC submitted a Request for Additional Information to the DOE by letter dated November 6, 2020 (ML20311A546), and the DOE provided its response by letters dated June 21, 2021, and July 29, 2021 (ML21194A031 and ML21264A531).

The purpose of the Draft WIR Evaluation for VLAW and the supporting documents is to show that the DOE's actions or proposed actions for managing VLAW will satisfy the criteria in DOE Manual 435.1-1, Radioactive Waste Management Manual. These criteria must be met for a determination that VLAW is not high-level radioactive waste and may be managed as low-level radioactive waste.

The NRC staff has conducted an independent, risk-informed, technical review of the Draft WIR Evaluation for VLAW and supporting information provided by the DOE and documented the results of its review in the enclosed Technical Evaluation Report (TER). This consultative review was conducted in accordance with the Interagency Agreement between the DOE and the NRC for Hanford activities, in which the DOE has requested that the NRC provide technical advice and consultation regarding the DOE WIR determinations for VLAW produced and disposed at the Hanford site.

The DOE requested the NRC to evaluate a portion of the entire VLAW waste stream referred to as the Direct-Feed Low-Activity Waste (DFLAW) with respect to meeting DOE Manual

435.1-1 Criteria. In the enclosed TER, the NRC staff provides conclusions for the DFLAW portion of the waste evaluated against DOE Manual 435.1-1 criteria, as well as observations about the remainder of the VLAW and secondary wastes that will be produced.

As a result of its review, the NRC staff concluded that the DOE has demonstrated that it has met all three of the criteria in DOE Manual 435.1-1 for DFLAW. However, limiting the scope of the evaluation to a particular wasteform (i.e., glass) resulting from waste processing adds uncertainty as to whether the cumulative impacts of the wastes that will be disposed at the IDF are acceptable. All waste streams resulting from processing that could produce a significant contribution to projected doses that were included within the IDF PA should be within the scope of the WIR evaluation. Alternatively, the DOE should develop a separate evaluation that documents the DOE's decision that all wastes disposed in the IDF meet the WIR criteria from DOE Order 435.1, with an indication of the point in the waste process flow that this determination is made.

In addition, the NRC staff recommends the DOE develop verification plans for production-scale wasteforms to reduce the uncertainty involved with processing novel wastes and recycling of off-gas used during vitrification. The NRC staff recommends that the DOE collect operational data to verify that the actual wasteform performance is consistent with the wasteform performance in the Draft WIR Evaluation for VLAW. These conclusions and recommendations, as well as others included within the enclosed TER, are being provided to the DOE for consideration only and are not intended to represent any regulatory authority related to the DOE's waste determination activities.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's ADAMS. ADAMS is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions or need additional information regarding this report, please contact Ms. Priya Yadav at [Priya.Yadav@nrc.gov](mailto:Priya.Yadav@nrc.gov) or 301-415-6667.

Sincerely,



Signed by Koenick, Stephen  
on 05/20/22

Stephen S. Koenick, Chief  
Low-Level Waste and Projects Branch  
Division of Decommissioning, Uranium  
Recovery and Waste Programs  
Office of Nuclear Material Safety  
and Safeguards

Docket No. PROJ0736

Enclosure:  
NRC Technical Evaluation Report for Draft  
Waste Incidental to Reprocessing Evaluation  
for Vitrified Low-Activity Waste Disposed  
Onsite at the Hanford Site

cc: w/ Enclosure:  
WIR ListServ

NRC Technical Evaluation Report for Draft WIR Evaluation for VLAW Disposed at Hanford, WA DATE May 20, 2022

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