



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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June 9, 2022

MEMORANDUM TO: NOTE-TO-FILE

FROM: Harry D. Felsher, Sr. Project Manager /RA/  
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Office of Nuclear Material Safety and Safeguards

SUBJECT: SUMMARY OF MAY 19, 2022, U.S. NUCLEAR REGULATORY  
COMMISSION TECHNICAL CALL WITH U.S. DEPARTMENT OF  
ENERGY REGARDING SAVANNAH RIVER SITE SALTSTONE  
DISPOSAL FACILITY (DOCKET NO. PROJ0734)

On May 19, 2022, the U.S. Nuclear Regulatory Commission (NRC) held a technical call with the U.S. Department of Energy (DOE) related to the DOE Savannah River Site (SRS) Saltstone Disposal Facility (SDF). Under the Ronald W. Reagan National Defense Authorization Act (NDAA) for Fiscal Year 2005 Section 3116(b), the NRC, in coordination with the NDAA-Covered State of South Carolina, monitors the DOE disposal actions at the SRS SDF for the purpose of the DOE demonstrating that the waste can be managed as low-level waste (i.e., as Waste Incidental to Reprocessing). The NDAA-Covered State of South Carolina was invited and did participate in this NDAA-Monitoring Call.

The NRC uses the term "disposal structure" to mean a self-enclosed entity used to contain saltstone and isolate it from the environment. Thus, the NRC has identified that the DOE current plan includes 15 disposal structures (i.e., Saltstone Disposal Structure (SDS) 1, SDS 2A, SDS 2B, SDS 3A, SDS 3B, SDS 4, SDS 5A, SDS 5B, SDS 6 through SDS 12). The DOE uses the term saltstone disposal unit (SDU) to mean either one disposal structure (e.g., SDU 1, SDU 4, SDU 6 through SDU 12) or two related disposal structures (e.g., SDU 2 for SDS 2A/2B, SDU 3 for SDS 3A/3B, SDU 5 for SDS 5A/5B).

During the call, the DOE provided technical information related to the DOE detecting radiation above the free release levels of beta/gamma activity in samples collected in March 2022 from the SDS 6 east leak detection sump. The DOE explained that there are four leak detection sumps around SDS 6 and that samples taken from the other three sumps in March 2022 showed no beta/gamma activity. The DOE stated that water has been collecting in all four leak detection sumps since completion of SDS 6 construction and prior to any saltstone being placed in SDS 6. The DOE attributed that water to rainwater intrusion. The DOE regularly samples the four sumps and analyzes those samples. Prior to the March 2022 sample analysis, there has been no indication of beta/gamma activity.

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The preliminary test results of the March 2022 sample from the SDS 6 east leak detection sump identified the presence of both technecium-99 and iodine-129. Based upon the presence of the isotopes in that sample, the DOE's initial conclusion was that the source of contamination is from saltstone in SDS 6.

The DOE has not placed any additional saltstone into SDS 6 since beta/gamma activity in the east leak detection sump was identified. The four leak detection sumps are enclosed within the SDS 6 High-Density Polyethylene (HDPE) liner system. The DOE has checked the external walls of SDS 6 and the area around SDS 6 and did not find contamination. The DOE will perform an Unreviewed Waste Management Question Evaluation (UWMQE) to evaluate any impacts to the DOE 2020 SDF Performance Assessment (PA) that is currently being reviewed by the NRC. The DOE is evaluating additional actions, including adding lysimeters under SDS 6. The DOE plans to provide updated information to the NRC based on the UWMQE when it becomes available. The DOE agreed with a previous NRC query regarding the NRC performing an Onsite Observation Visit sometime later in Calendar Year 2022, specifically regarding construction of leak detection sumps in future disposal structures.

The NRC asked the DOE questions and the DOE provided responses:

- NRC: Are the four leak detection sumps (i.e., north, south, east, west) for SDS 6 interconnected?
- DOE: Yes the leak detection sumps are interconnected; but only the sample from the east sump for SDS 6 has shown detectable beta/gamma activity.
  
- NRC: Is this issue of contamination in a leak detection sump a concern for SDS 7?
- DOE: No, there is no concern for this issue at SDS 7. The SDS 7 sumps are being monitored closely and sumps remain dry.
  
- NRC: Is it possible to have a video inspection inside SDS 6 to see if the walls are wet and to see if a shrinkage gap exists between the saltstone and the wall?
- DOE: There is a video surveillance system installed inside SDS 6. However, it may be unable to inspect for a shrinkage gap between the saltstone and the wall. If the need arises, the DOE will investigate options to obtain that capability.
  
- NRC: Will the DOE UWMQE include a review of the HDPE performance and potential implications for the 2020 SDF PA?
- DOE: Yes, an evaluation of the performance of both the HDPE and floor of the disposal structure will be included in the UWMQE.

Summary of May 19, 2022 U.S. Nuclear Regulatory Commission Technical Call with U.S. Department of Energy Regarding Savannah River Site Saltstone Disposal Facility DATE June 9, 2022

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