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March 21, 2016

**MEMORANDUM TO:** Andrea Kock, Deputy Director  
Division of Decommissioning, Uranium Recovery,  
and Waste Programs  
Office of Nuclear Material Safety  
and Safeguards

**THRU:** Gregory Suber, Chief */RA/*  
Low-Level Waste Branch  
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and Waste Programs  
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**FROM:** Harry Felsher, Sr. Project Manager */RA/*  
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and Waste Programs  
Office of Nuclear Material Safety  
and Safeguards

**SUBJECT:** ONSITE OBSERVATION GUIDANCE FOR APRIL 19 – 21, 2016,  
MONITORING VISIT TO THE SAVANNAH RIVER SITE, SALTSTONE  
DISPOSAL FACILITY (DOCKET NO. PROJ0734)

The U.S. Nuclear Regulatory Commission (NRC) staff is planning an onsite observation visit on April 19 – 21, 2016, to the U.S. Department of Energy, Savannah River Site, Saltstone Disposal Facility to monitor activities related to the disposal of non-high-level waste, per the NRC responsibilities under the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005.

The enclosed guidance describes the areas of focus for the onsite observation visit. The detailed agenda and summary will be included in the onsite observation visit report.

Enclosure: Onsite Observation Visit Guidance

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## **ONSITE OBSERVATION GUIDANCE FOR APRIL 19 – 21, 2016, MONITORING VISIT TO THE SAVANNAH RIVER SITE SALTSTONE DISPOSAL FACILITY**

### **PURPOSE:**

The purpose of this document is to provide onsite observation guidance for a planned visit on April 19 – 21, 2016, to the U.S. Department of Energy (DOE) Savannah River Site (SRS) Saltstone Disposal Facility (SDF) to monitor activities related to the disposal of non-high-level waste, per the U.S. Nuclear Regulatory Commission (NRC) responsibilities under Section 3116(b) of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005 (NDAA).

### **OBJECTIVES:**

1. Observation and technical review of activities and documentation; and
2. Follow-Up Action Items from previous onsite observation visits, technical review reports, or teleconference calls.

### **BACKGROUND:**

The NDAA Section 3116(a) authorizes the DOE, in consultation with the NRC, to determine whether certain radioactive waste related to the reprocessing of spent nuclear fuel is not high-level waste provided certain criteria are met. The NDAA Section 3116(b) requires the NRC to monitor the DOE disposal actions to assess compliance with Title 10, *Code of Federal Regulations* (10 CFR), Part 61, Subpart C performance objectives for low-level waste. On March 31, 2005, the DOE submitted to the NRC a draft Waste Determination (WD), "Draft Section 3116 Determination, Salt Waste Disposal, Savannah River Site." The purpose of the draft WD was to demonstrate compliance with the criteria in NDAA Section 3116(a), including compliance with the performance objectives in 10 CFR Part 61, Subpart C. Per the NRC's NDAA consultation role, the NRC staff reviewed the draft WD. In December 2005 the NRC staff documented the results of its review in a Technical Evaluation Report (TER), where the NRC concluded that there was reasonable assurance that the applicable NDAA criteria could be met, provided that certain assumptions made in the DOE analysis were verified during monitoring. The DOE issued the final WD in January 2006, which took into consideration the assumptions, conclusions, and recommendations documented in the NRC TER.

The NRC onsite observation of the disposal actions taken by the DOE focuses on the performance objectives set out in 10 CFR Part 61, Subpart C. Those performance objectives are: (i) Protection of the general population from releases of radioactivity (§61.41); (ii) Protection of individuals against inadvertent intrusion (§61.42); (iii) Protection of individuals during operations (§61.43); and (iv) Stability of the disposal site after closure (§61.44).

Per the NRC's NDAA Section 3116(b) monitoring role, the NRC finalized Revision 0 of the SDF monitoring plan in May 2007. In November 2009 the DOE submitted an updated Performance Assessment (PA), "2009 Performance Assessment for the Saltstone Disposal Facility at the Savannah River Site" for the NRC review per the NRC's NDAA monitoring role. Following

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extensive discussions with the DOE, the NRC staff completed its review and documented the NRC conclusions in a TER dated April 30, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML121020140). In that TER, the NRC concluded that it did not have reasonable assurance that the performance objective in §61.41 would be met. However, the NRC concluded that the §61.42, §61.43, and §61.44 performance objectives were met. Also on April 30, 2012, the NRC issued a Type-IV Letter of Concern (ADAMS Accession No. ML120650576) that formally communicated the NRC concerns to both the DOE and the South Carolina Department of Health and Environmental Control (i.e., South Carolina regulator of SRS). The NRC and the DOE continue to work within the NRC's NDAA monitoring process to resolve all outstanding concerns that led to the issuance of the NRC Type-IV Letter of Concern.

Per the NRC's NDAA monitoring role, the NRC finalized Revision 1 of the SDF monitoring plan in September 2013 (ADAMS Accession No. ML13100A113). This onsite observation visit guidance was developed in accordance with the September 2013 SDF monitoring plan to ensure consistency in the NRC staff monitoring activities.

#### **OBSERVATION REQUIREMENTS:**

The NRC staff will use the following guidance to direct the observation while visiting the SRS SDF.

#### **Observation and Technical Review of Activities and Documentation**

The NRC plans to conduct the following activities during this onsite observation visit (and next to each activity is the associated Monitoring Factor(s) (MFs) from the September 2013 SDF monitoring plan):

1. The NRC and the DOE to selectively discuss the DOE Responses (not yet received by the NRC) to the *NRC Request for Additional Information Questions* (ADAMS Accession No. ML15161A541) for the *DOE Fiscal Year 2014 Special Analysis for the Saltstone Disposal Facility at the Savannah River Site* (SRR-CWDA-2014-00006, Rev. 2) (ADAMS Accession No. ML14316A586). (All MFs)
2. Update on Z-Area groundwater monitoring and characterization data, including:
  - a. Discuss certain results of *2015 Annual Groundwater Monitoring Report* (SRNL-TR-2015-003000). (MF 8.02); and
  - b. Discuss *2016 Groundwater Characterization Data Report* (SRNS-RP-2015-00902), comparison of observed vs. as-modeled SDF hydrogeology, and potential effects on projected subsurface transport of radionuclides. (MF 8.02, MF 10.01, & MF 10.02)
3. Review recent research results developed since the previous onsite observation visit, including, but not limited to:
  - a. Laboratory testing of saltstone core samples. (MF 3.01, MF 3.02, MF 3.03, MF 4.01, MF 4.02, MF 5.01, & MF 5.02);

- b. *Chemical and Physical Properties of Tc-Spiked Saltstone as Impacted by Curing Duration and Leaching Atmosphere* (SREL Doc No. R-15-0003). (MF 3.04, MF 5.02, & MF 5.05); and
  - c. *Examination of Tc, S, and Fe Speciation within Saltstone* (SRRA042328-000004). (MF 5.02)
- 4. Tour the site, including:
    - a. View SDS 3A, SDS 3B, SDS 5A, and SDS 5B and view construction of SDS 6. (MF 6.01, MF 6.02, MF 6.03, MF 6.04, & MF 6.05);
    - b. Z-Area perimeter and locations where the road intersects McQueen Branch and the Upper Three Runs. (MF 2.02 & MF 10.02); and
    - c. Research and development activities being conducted at Savannah River Ecology Laboratory relating to saltstone cementitious property testing, including activities involving core samples extracted from SDS 2A. (MF 3.01, MF 3.02, MF 3.03, MF 4.01, MF 5.01, MF 5.02, & MF 5.05)
  - 5. Discuss status of operations at SDF since last onsite observation visit, including volume of grout poured, current status of SDS 4, status of the leak detection system in SDS 3A, and any unusual occurrences (e.g., visual inspection results, production issues, worker protection). (MF 3.02, MF 3.03, MF 4.02, and MF 8.01)
  - 6. If saltstone is being poured, then observe saltstone production facility operations. (MF 1.01, MF 3.02, MF 3.03, MF 4.02, & MF 11.01)
  - 7. Discuss SDS 6 construction and testing. (MF 6.03, MF 6.04, MF 6.05, & MF 8.01)
  - 8. Discuss the DOE switch from Grade 100 to Grade 120 slag as well as the DOE change in slag vendor. (MF 6.01 & MF 6.04)
  - 9. The DOE to discuss changes to Tank 50 Waste Acceptance Criteria (WAC) sample documentation that are in progress, which will allow the DOE to get the sample analysis results to the NRC in a more timely fashion. (MF 1.02)

Follow-Up Action Items from Previous Onsite Observation Visits, Technical Review Reports, or Teleconference Calls

- 1. The DOE will provide the NRC with information on SDS 3A, SDS 3B, SDS 5A, and SDS 5B fill height restrictions related to resolution of mercury Potential Inadequacy in Safety Analysis (SDF-CY15-02-001).

Completion of any observation or technical review of activities and documentation, including Follow-Up Action Items, is dependent on either the DOE performing the activity and/or the availability of the documentation during the onsite observation visit.