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NUCLEAR REGULATORY COMMISSION  
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February 7, 2019

**MEMORANDUM TO:** Bo Pham, Acting Director  
Division of Decommissioning, Uranium Recovery  
and Waste Programs  
Office of Nuclear Material Safety  
and Safeguards

**THRU:** Stephen Koenick, Chief **//RA//**  
Low-Level Waste and Projects Branch  
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**FROM:** Lloyd Desotell, Project Manager **//RA//**  
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Office of Nuclear Material Safety  
and Safeguards

**SUBJECT:** GUIDANCE FOR THE MARCH 18-19, 2019, MONITORING ONSITE  
OBSERVATION VISIT TO THE SAVANNAH RIVER SITE F AND H  
AREA TANK FARMS (DOCKET NO. PROJ0734)

The U.S. Nuclear Regulatory Commission (NRC) staff is planning an onsite observation visit on March 18-19, 2019, to the U.S. Department of Energy, Savannah River Site F and H Area Tank Farms 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. While this is primarily an F and H Area Tank Farm observation visit, some of the subject matter is also applicable to the Saltstone Disposal Facility.

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:** Guidance for Onsite Observation Visit  
**cc:** (w/ Enclosure)  
WIR Service List  
WIR ListServ

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**ADAMS Accession No: ML 19016A468**

**\*via email**

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## **GUIDANCE FOR THE MARCH 18-19, 2019, MONITORING ONSITE OBSERVATION VISIT TO THE SAVANNAH RIVER SITE F AND H AREA TANK FARMS**

### **PURPOSE:**

The purpose of this document is to provide guidance for a planned monitoring onsite observation visit (OOV) on March 18-19, 2019, to the U.S. Department of Energy (DOE) Savannah River Site (SRS) F and H Area Tank Farms (TFs) 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). While this is primarily a TF observation visit, some of the subject matter is also applicable to the Saltstone Disposal Facility (SDF).

### **OBJECTIVES:**

1. Tour the General Separations Area (GSA) surface water and other features important to developing mathematical models of contaminant fate and transport used in the performance assessments (PAs) for the Tank Farm and Saltstone Disposal facilities; and
2. Continued discussion on hydrogeological and other technical issues from previous OOVs, technical review reports (TRRs), and teleconference calls.

### **BACKGROUND:**

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. NDAA Section 3116(b) requires NRC to monitor 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. The history of NRC's review of DOE's draft F and H TF waste determinations is presented in a previous guidance memo (ML18192A328).

### **OBSERVATION REQUIREMENTS:**

This OOV of the disposal actions taken by the DOE at the SRS TFs 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). The NRC staff will use the following information to direct the activities during this OOV.

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

The NRC plans to conduct the following activities during this OOV. Next to each activity is the associated monitoring factor(s) (MFs) from the NRC 2015 TFs Monitoring Plan (ADAMS Accession No. ML15238B403) and NRC Saltstone Monitoring Plan (ADAMS Accession No. ML13100A113):

ENCLOSURE

1. DOE provides a tour of surface water, groundwater seeps including seepage faces, hydrostratigraphic/geologic unit outcrop locations, calcareous zone outcrop locations, and other relevant features of the GSA that are pertinent to development of the groundwater flow and transport model that is being used to support the TF and SDF PAs. As part of this tour, DOE should show a sampling of stream gauging stations and monitoring well locations used to develop model calibration targets and to monitor releases from the tank farms and disposal facilities. If practical, DOE should also provide a tour of expected sources of existing groundwater plumes at the disposal facilities (e.g., F-Area Inactive Process Sewer Line and seepage basins). (For TFs: MFs 4.2, “Calcareous Zone Characterization,” 4.3, “Environmental Monitoring,” and 6.3, “Tank Farm PA Revisions”; for SDF: MFs 10.02, “Defensibility of Conceptual Models,” and 10.13, “Impact of Calcareous Zones on Contaminant Flow and Transport.”)

2. Discuss DOE GSA 2016 hydrologic flow and transport model update activities including recent data collection from near the Saltstone Disposal Facility; development of updated calibration targets; development of updated baseline hydraulic conductivity assignments; and model validation activities. Discuss available measurements to perform hydrograph separation and estimate baseflow. Discuss plans to conduct additional pumping tests to estimate and constrain hydraulic conductivity measurements at HTF. Discuss the GSA 2016 model boundary conditions, detailed simulated water budget, and key uncertainties associated with the PORFLOW model. (For TFs: MFs 6.2, “Model and Parameter Support,” and 6.3, “Tank Farm PA Revisions”; for SDF: MFs 10.02, “Defensibility of Conceptual Models,” and 8.02, “Groundwater Monitoring.”)

3. Discuss the TRR that NRC has issued since the August 2018 OOV.

- Tank 18 Real Waste Release Testing and Associated PA Documentation (ML18242A259) (For TFs: MF 2.1, “Solubility Limiting Phases/Limits and Validation.”)

4. Discuss DOE’s updates to assumptions related to engineered cover performance and anticipated treatment in future PA updates. Discuss the impact of engineered covers on the steady-state, far-field groundwater model. (For TFs: MFs 5.1, “Long-Term Hydraulic Performance,” and 5.2, “Long-Term Erosion Protection Design”; for SDF: MF 2.01, “Hydraulic Performance of Closure Cap,” and MF 2.02, “Erosion Control of the SDF Engineered Surface Cover and Adjacent Area.”)

5. Discuss recently completed and upcoming DOE and NRC-sponsored CNWRA research activities including tank grout groundwater conditioning experiments and saltstone waste release experiments.

Follow-Up Action Items (FUAIs) from previous OOVs, TRRs, or teleconference calls:

The table below contains remaining FUAIs that were opened during TFs Observation 2018-01, including a unique NRC identifier for each FUA:

Unique Identifier	FUAI
TFs CY18-01-006	The DOE to provide the NRC with available documents from listing of follow-up items from <i>Tank 12 and Tank 16 Grouting</i> TRR
TFs-CY18-01-007	The NRC to hold teleconference with the DOE to follow-up on items from the Tank 12 and Tank 16 Grouting TRR (ML16231A444)

Many of the FUAIs from previous TRRs were closed during TFs Observation 2018-01 (ML18311A184). The FUAIs that remain open from the *Tank 12 and Tank 16 Grouting* TRR (and associated teleconference conducted on May 17, 2016) are as follows:

*FUAIs from Tanks 12 and 16 Grout TRR*

- #5: The DOE will gather information regarding the impact of caustic solution on clean cap grout reactivity and flowability.
  - #7: The DOE will provide data and information on Grade 120 tank grout wet chemistry test, flow test, compressive strength test, bleed test, and heat of hydration as a function of time.
  - #8: The DOE will clarify if the same strategy with respect to disposal of chromate-laden flushwater was used in Tank 12 as was used in Tank 16. The DOE will also provide any related work orders.
- #9: The DOE will provide a copy of SDDR No. 13307 and associated deviation disposition documents.
- #10 The DOE will provide clarification regarding the approach used for grouting the Tank 12 ventilation duct (see SRR-LWE-2014-00147 (ML16057A499)).
- #11: The DOE will provide reference documents and confirmation to the NRC for the maximum drop height for Tank 12. The NRC staff will review the final configuration report for Tank 12 to see if any additional information is needed regarding Tank 12 grouting.

*FUAIs from May 17, 2016 Tanks 12 and 16 Grout TRR Teleconference (ML16167A237)*

- #1: The DOE will gather information regarding the Tank 16 clean cap specification, explicitly whether Daratard or admixtures are used to increase flowability of the grout at a specified water:cement ratio.
- #2: The DOE will gather information to explain why compressive strength measurements are not required for the clean cap grout.
- #4: The DOE will provide attachments to work orders 01324150-64 and 01337683-33, as well as references related to the transition to use and testing of Grade 120 slag.

- #5: The DOE will gather information to clarify the testing of Grade 120 slag.