



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
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February 7, 2017

MEMORANDUM TO: Gregory Suber, Chief  
Low-Level Waste Branch  
Division of Decommissioning, Uranium Recovery,  
and Waste Programs  
Office of Nuclear Material Safety  
and Safeguards

FROM: R. Lee Gladney, Project Manager /RA/  
Low-Level Waste Branch  
Division of Decommissioning, Uranium Recovery,  
and Waste Programs  
Office of Nuclear Material Safety  
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SUBJECT: SUMMARY OF DECEMBER 13, 2016, CLARIFYING  
TELECONFERENCE CALL RELATED TO REVIEW OF SAVANNAH  
RIVER SITE SALTSTONE DISPOSAL FACILITY FISCAL YEAR 2014  
SPECIAL ANALYSIS DOCUMENT (DOCKET NO. PROJ0734)

On December 13, 2016, the U.S. Nuclear Regulatory Commission (NRC) held a clarifying teleconference call (telecon) with the U.S. Department of Energy (DOE), which included the DOE contractors, related to the NRC review of the DOE Savannah River Site Saltstone Disposal Facility (SDF) Fiscal Year (FY) 2014 Special Analysis Document. Please see below for the highlights of that telecon and see the enclosure for a technical summary of that telecon.

The highlights of that telecon were the following:

This telecon was a follow-up to the November 14, 2016, NRC/DOE clarifying telecon and the summary of that telecon is in the NRC's Agencywide Documents Access and Management System as Accession No. ML16354A116. During this December 13, 2016, telecon, the NRC and DOE discussed a path forward with regards to dose and technetium (Tc)-99 solubility for the SDF.

Enclosure: Technical Summary of December 13, 2016, Clarifying Teleconference Call

CC: (w/Enclosure): WIR Service List  
WIR External e-Mail Contacts List  
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Prior to the telecon, the DOE provided data/figures to the NRC reflecting dose as a factor of solubility and years after closure. During the telecon, the DOE indicated that it is still conducting tests with regards to technetium (Tc) solubility. As noted during the November 2016 telecon, the NRC again expressed concerns regarding residence time effects in that those reflected in the DOE data/figures may not be the highest observed in the field. The DOE indicated that experiments to evaluate the residence time effect were ongoing. The NRC asked DOE what sector the data/figures represented. The DOE indicated that the data was the peaks occurring at any sector, not at any one location, but that DOE had the data for each individual sector. The NRC requested that the DOE provide data that is separated both by radionuclide and by sector. The DOE indicated that it would be able provide the NRC with draft data within a week and then provide the releasable data to the NRC by mid- to late-January 2017.

The NRC asked the DOE how the upcoming new NRC SDF Technical Evaluation Report (TER) would be utilized. The DOE indicated that the new TER would be used to: (1) update the 2009 DOE SDF Performance Assessment (PA) and (2) assist in future DOE research and development. The DOE noted that the update to the 2009 DOE SDF PA has been delayed due to the Federal Government Fiscal Year 2017 Continuing Resolution.

As noted many times during NRC monitoring at the SDF since 2006, the NRC reiterated to the DOE that it has concerns regarding the DOE degradation assumptions.

The NRC indicated to the DOE that, with the additional DOE data to be submitted in January 2017, it is likely that NRC would need to delay issuing the new TER to reflect the new DOE data. The DOE indicated that it understood that delay and that the delay would not affect the DOE use of the new TER.

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**TECHNICAL SUMMARY OF DECEMBER 13, 2016, CLARIFYING TELECONFERENCE CALL  
RELATED TO REVIEW OF SAVANNAH RIVER SITE  
SALTSTONE DISPOSAL FACILITY FISCAL YEAR 2014 SPECIAL ANALYSIS DOCUMENT**

The U.S. Department of Energy (DOE) discussed the draft data and figures that it had sent to the U.S. Nuclear Regulatory Commission (NRC) prior to the teleconference call (telecon). The main points of that discussion focused on the projected dose for two modeled cases. Case (1) used a technetium (Tc) solubility of  $1 \times 10^{-7}$  moles per liter (mol/L), which had been included as a sensitivity analysis in the DOE Saltstone Disposal Facility (SDF) Fiscal Year (FY) 2014 Special Analysis Document. Case (2) was a new case that used a Tc-99 solubility of  $5 \times 10^{-7}$  mol/L, an initial saturated hydraulic conductivity of  $3.9 \times 10^{-10}$  centimeters per second (cm/s) and the DOE "Best Estimate" degradation assumptions. The Case (1) projection was a peak dose of approximately 25 millirem per year (mrem/yr) predicted to occur slightly after 5,000 years after closure. The draft Case (2) projection was a dose of approximately 20 mrem/yr at 10,000 years and a peak dose of approximately 85 mrem/yr at approximately 19,000 years.

The NRC and DOE had previously discussed Case (1) because it was part of the DOE SDF FY 2014 Special Analysis Document. For this telecon, Case (1) was provided by the DOE for comparison.

Regarding Case (2), the NRC indicated that it has previously expressed concerns about DOE degradation assumptions (e.g., in Request for Additional Information Questions and during previous Onsite Observation Visits). The DOE indicated that, in recent tests of simulated saltstone samples, it had not seen significant degradation for three pore volumes, which would represent 3,000 to 4,000 years in the field.

The NRC indicated that, because the preliminary DOE data suggested a residence time effect on Tc-99 solubility, it was not clear that the Tc-99 concentration that the DOE modeled (i.e.,  $5 \times 10^{-7}$  mol/L), would bound the values seen in the field. The DOE indicated that experiments to evaluate the residence time effect were ongoing. The DOE also indicated that the  $5 \times 10^{-7}$  mol/L observed solubility only represents Tc-99 concentrations in part of one pore volume, and was therefore highly uncertain.

In response to an NRC request, the DOE agreed to provide the NRC with releasable versions of the data and figures that: (1) are not labeled as "Draft"; (2) use the iodine sorption coefficients ( $K_d$  values) supported by the recent DOE research (i.e., 0 milliliters per gram); and (3) present separate results by both sector and individual radionuclides.

The NRC asked the DOE how the upcoming new NRC SDF Technical Evaluation Report (TER) would be used. The DOE indicated that the new TER would be used to: (1) update the 2009 DOE SDF Performance Assessment (PA) and (2) assist in future DOE research and development. The DOE noted that the update to the 2009 DOE SDF PA has been delayed due to the Federal Government Fiscal Year 2017 Continuing Resolution.

The NRC indicated to the DOE that, with the additional DOE data to be submitted in January 2017, it is likely that NRC would need to delay issuing the new TER to reflect the new DOE data. The DOE indicated that it understood that delay and that the delay would not affect the DOE use of the new TER.

ENCLOSURE