

August 12, 2011

NOTE TO: File PROJ0734

FROM: James Shaffner, Project Manager */RA/*
Low-Level Waste Branch
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SUBJECT: SUMMARY OF TELECONFERENCE BETWEEN THE U.S. NUCLEAR
REGULATORY COMMISSION STAFF AND THE U.S DEPARTMENT OF
ENERGY REPRESENTATIVES CONCERNING RESPONSES TO RAIs
RELATED TO CLOSURE OF F-TANK FARM, SAVANNAH RIVER SITE

On July 19, 2011, the U.S. Nuclear Regulatory Commission (NRC) staff convened a teleconference between NRC and the U.S. Department of Energy (DOE) technical staff and contractors to afford NRC technical staff a better understanding of responses and rationale therefore. The discussion also identified areas where additional clarification would be helpful. Meeting Participants are included in Enclosure 1; Summary of discussion is included in Enclosure 2. This is a summary of the topic areas discussed. The meeting was an information exchange. No decisions were required or made.

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Enclosures:

1. Meeting Participants
2. Summary

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DATE	7/26./11	809/11	8/10/11	8/12/11

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List of Participants
Teleconference with the U.S. Department of Energy Staff Re: Savannah River Site, F Area
Tank Farm
July 19, 2011

<u>Participant</u>	<u>Affiliation</u>
Sherri Ross	DOE Savannah River (DOE-SR)
Linda Suttora	DOE Headquarters (DOE-HQ)
Mark Layton	Savannah River Remediation (SRR)
Larry Romanowski	SRR
Kent Rosenberger	SRR
Steve Thomas	SRR
Cynthia Barr	U.S. Nuclear Regulatory Commission (NRC)
George Alexander	NRC
Leah Spradley	NRC
Mark Fuhrmann	NRC
James Shaffner	NRC
Janelle Jessie	NRC
Lane Howard	Center for Nuclear Waste Regulatory Analysis (CNWRA)
Bob Linhart	CNWRA
Roberto Pabalan	CNWRA

Summary

Teleconference Between U.S. Nuclear Regulatory Commission and U.S. Department of Energy Staff July 19, 2011

The purpose of the teleconference was to clarify understanding of the U.S. Department of Energy (DOE) responses to RAIs related to solubility, uncertainty analysis, and biosphere and, further, to clarify the U.S. Nuclear Regulatory Commission (NRC) concerns as they are likely to be reflected in the Technical Evaluation Report (TER).

RAI PA-1- Performance Assessment

Discussion:

The DOE confirmed that the NRC had received dose conversion factors (DCFs) provided in a June 29th submittal.

Status:

The NRC staff is still evaluating differences with respect to performance assessments (PA) for other sites.

CC-UA-3- Uncertainty Analysis

Discussion:

Discussion on uncertainty centered around supplemental figures the DOE produced illustrating key parameters affecting the Goldsim probabilistic results related to information presented in RAI-UA-3.

The DOE discussed the perceived disconnect between probabilistic and deterministic modeling results. The probabilistic model was designed to assess conservatism of parameters. The NRC is concerned that most probabilistic realizations are greater than deterministic results when comparing realizations for the Upper Three Runs aquifer, the point of maximum exposure. There was back and forth discussion regarding results and possible bias.

Status:

This issue will be further evaluated in the benchmarking discussion later in the week. The DOE provided a One-Off Analysis Summary (attached) to facilitate the discussion

RAI-NF- 8,9,10,11- Solubility Issues

Discussion:

Regarding solubility, there was general agreement that this was of primary importance regarding confidence in future site behavior and compliance with performance objectives. The NRC will be recommending specific follow-up experiments in monitoring space designed to reduce uncertainty. It is the NRC's intention to provide an overview of suggested solubility experiments in the upcoming TER.

The DOE indicated a willingness to conduct such experiments subject to budget constraints. DOE management does recognize the importance this effort and will likely make it a budget priority.

The NRC noted a reference regarding solubility experiments for Savannah River Site (SRS) tanks, the citation for which will be provided to the DOE. The NRC would like to get a good listing of all of the waste characterization efforts that have taken place at SRS to ensure any design experiment take advantage of any work that has been done to this point. The DOE noted and the NRC agrees that the references should not be taken out of context as they have been developed to inform waste retrieval efforts and may not be representative of tank conditions following cleaning. The reference NRC mentioned was King, William D. , Edwards, Tommy B. , Hobbs, David T. and Wilmarth, William R. (2010) 'Solubility of Uranium and Plutonium in Alkaline Savannah River Site High Level Waste Solutions', Separation Science and Technology, 45:12, 1793 — 1800.

The DOE pointed out that cases can be made regarding the insolubility of radionuclides remaining in tanks after aggressive tank cleaning initiatives. The NRC agrees that an argument regarding waste residuals generally being more recalcitrant after tank cleaning makes sense but the NRC just needs additional support for this key modeling assumption as the results are very sensitive to not only solubility limiting phase but the actual solubility limits as they evolve over time. The NRC needs confirmation that tank cleaning efforts are successful in removing as much readily soluble inventory as is practical and that modeling assumptions are not a substitute for good tank cleaning.

Status:

The NRC will provide an overview of suggested solubility experiments. Further, the NRC needs confirmation that tank cleaning efforts result in removal of readily soluble radionuclides.

RAI-IT-, 2, 3; CC-IT1, 2, 5 BiospheresDiscussion:

NRC staff noted that biosphere considerations were not as risk significant as other parameters, but there were some issues for which clarification would be beneficial. The NRC noted the high likelihood of compliance decision errors in both directions when doses are close to the limit and when uncertainty or variability in a parameter such as plant transfer factors vary orders of magnitude and only a single deterministic value is selected to demonstrate compliance.

There was some discussion regarding transfer factors for Tc in leafy vs. root vegetation (only root vegetables transfer factors were used in the F-Tank Farm PA). There was also clarifying discussion regarding assumptions for drinking water ingestion rates and impacts on dose. The NRC recommends using a common sense approach to biosphere parameters using reasonably conservative values for the average member of the critical group to minimize speculation about future human behavior.

The DOE noted that there was no correlation between garden size and peak doses for the 10 CFR 61.41 receptor, although the PA may have implied such a correlation.

Status:

The NRC may have a couple of relatively less risk-significant recommendations in the TER regarding selection of biosphere parameters and biosphere modeling for the DOE to consider in future PA updates.

Other Clarifications Not Related to Specific RAs:

The DOE noted that analysis of tank intrusion was for an acute, not chronic, dose. The NRC would like to obtain the calculations for waste classification where a chronic exposure scenario was evaluated.

The DOE clarified that Tank 19 in-leakage derived from water intrusion from risers and other tank penetrations rather than from water table rise.

It was also noted that caution should be used when attempting to generalize tank performance, even among like tank types. There are differences in design features, settings, and history that suggest unique behavior.

The DOE recognizes the potential for early liner failure and the existence of uncertainty around the assumed liner failure date in the simplified PA model. It is looking for suggestions for how liner failure variability may be better predicted/analyzed in the PA.

All agreed that there would be discussions on a patch model approach in later discussions.

Attachment:

Table 1: One-Off Analysis Summary for 100,000 Year Peak Mean of Peak Doses and related figures