

August 12, 2011

MEMORANDUM TO: File PROJ0734

FROM: James Shaffner, Project Manager */RA/*
Low-Level Waste Branch
Environmental Protection
and Performance Assessment Directorate
Division of Waste management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Program

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 20, 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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(301) 415-5496

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ML112070026

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NAME	JShaffner	AWalker-Smith	GSuber	JShaffner
DATE	7/26/11	8/9/11	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 20, 2011

Participant

Sherri Ross
Linda Suttora
Mark Layton
Larry Romanowski
Steve Thomas
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Ben Dean
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Summary

Teleconference Between the U.S. Nuclear Regulatory Commission and the U.S. Department of Energy Staff July 20, 2011

RAI-UA-3: Uncertainty Re: residual Tc in tanks 5 and 6:

Discussion:

The U.S. Department of Energy (DOE) clarified the basis for the assignment of 1 Ci Tc for F-Tank Farm tanks in follow-up GoldSim simulations related to CC-UA-3. The assignment was based on two references related to Tanks 5 and 6 (SRNL-STI-2009-00492 and SRNL-STI-2009-00493) cited in the RAI-UA-3 response. The U.S. Nuclear Regulatory Commission (NRC) specifically inquired about the estimate for the Tank 6 inventory. The DOE indicated that it was confident that residual Tc inventories are less than 1 Ci in Tank 6 based on analysis of a solid sample taken out of a mound of residual material that was expected to be well-mixed and representative of the tank contents and was obtained after the first of three chemical cleaning cycles and prior to mechanical cleaning. The DOE indicated that the sample analysis concentrations and volume estimate of 3000 gallons was used in the estimate of 0.85 Ci for Tank 6.

Status:

No additional follow-up needed at this time.

RAI-I & E-3: Infiltration

Discussion:

The NRC staff stated that it will be noted in the Technical Evaluation Report (TER) that the DOE is achieving long-term infiltration-reducing performance for the upper foundation layer of the engineered cover. Achievement of the assumed hydraulic conductivity of the upper foundation layer will be addressed during the monitoring period.

Status:

No follow-up required.

RAI-NF-2, 3, 4, 6, 13, 16 Steel Liner Failure and Concrete Degradation:

Discussion:

The NRC indicated that the steel liner degradation report was comprehensive in the sense that it evaluated a wide range of potential degradation mechanisms. Nonetheless, there is still concern by the NRC staff regarding the ultimate use of the information from the steel liner degradation report in the FTF PA including the assignment of weights for more aggressive degradation configurations in the probabilistic assessment. Due to the large uncertainty

associated with this barrier, the NRC staff thought that the assumptions regarding the longevity of steel liners were potentially overly optimistic in the base case or deterministic model. The NRC staff was also concerned with the apparent inconsistencies between the cement degradation modeling and steel liner degradation modeling with respect to concrete vault performance. The DOE explained the rationale for modeling steel liner failure as a discrete event (e.g., allows for in-growth of Ra from U-234 and Th-230 prior to steel liner failure and maximizes peak). The NRC agreed that the discrete failure would be conservative for certain radionuclides and partial, early failure using a patch model would depress the peaks in the performance period; however, some later peaks are currently significantly higher than the project objectives and earlier failure, albeit at a lower value, might prove more challenging to the performance demonstration considering a 10,000 year period of performance. The DOE informed the NRC that many of the observations regarding the concrete vaults and tank system leakage were related to H-Farm Tank and/or current tank conditions (i.e., differ from conditions at closure). The DOE also expressed an interest in discussing how a partial, early failure of the steel liner may be modeled. The NRC agreed to provide the DOE with a Yucca Mountain patch model example and to see if there were other examples related to modeling release from a non-homogeneous waste zone.

Status:

Although the NRC expects to document its remaining concerns regarding steel liner performance in the TER, the NRC would not recommend a patch model at this time. The NRC will re-visit what additional work may need to be conducted after the collection of additional information related to waste solubility.

The NRC contractor will provide patch model reference to staff and staff will provide to the DOE.

The DOE requested references related to alternative modeling techniques for waste form. They requested this outside of the staff's comments in the TER. The NRC informed the DOE that they would look into it and would provide any useful information.