March 16, 2011

NOTE TO: File

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 REQUESTS FOR ADDITIONAL INFORMATION PERTAINING TO THE DRAFT WASTE DETERMINATION AND RELATED PERFORMANCE ASSESSMENT RELATED TO THE CLOSURE OF THE F AREA TANK FARM AT THE SAVANNAH RIVER SITE

On February 10, 2011, the U.S. Nuclear Regulatory Commission (NRC) staff convened a meeting between NRC and the U.S. Department of Energy (DOE) technical staff and contractors to afford DOE an opportunity to better understand the bases for NRC requests for additional information related to the draft basis document and related performance assessment in support of the closure of F Area Tank Farm at the Savannah River Site. This was the fourth of a series of such meetings to occur on successive Thursdays through February 24, 2011.

Meeting Participants are included in Enclosure 1; Summary of discussion is included in Enclosure 2. A. Key Issues Matrix prepared by DOE and commented upon by NRC staff is included as Enclosure 3.

Enclosures:
1. Meeting Participants
2. Summary
3. DOE Key Issues Matrix

Project No.: PROJ0734

CONTACT: James Shaffner, FSME/DWMEP
(3010 415-5496

NOTE TO: File

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 REQUESTS FOR ADDITIONAL INFORMATION PERTAINING TO THE DRAFT WASTE DETERMINATION AND RELATED PERFORMANCE ASSESSMENT RELATED TO THE CLOSURE OF THE F AREA TANK FARM AT THE SAVANNAH RIVER SITE

On February 10, 2011, the U.S. Nuclear Regulatory Commission (NRC) staff convened a meeting between NRC and the U.S. Department of Energy (DOE) technical staff and contractors to afford DOE an opportunity to better understand the bases for NRC requests for additional information related to the draft basis document and related performance assessment in support of the closure of F Area Tank Farm at the Savannah River Site. This was the fourth of a series of such meetings to occur on successive Thursdays through February 24, 2011.

Meeting Participants are included in Enclosure 1; Summary of discussion is included in Enclosure 2. A. Key Issues Matrix prepared by DOE and commented upon by NRC staff is included as Enclosure 3.

Enclosures:
1. Meeting Participants
2. Summary
3. DOE Key Issues Matrix

Project No.: PROJ0734

CONTACT: James Shaffner, FSME/DWMEP
(3010 415-5496

ML110730684

OFC	DWMEP	DWMEP	DWMEP	DWMEP
NAME	JShaffner	AWalker-Smith	M.Lee for GSuber	JShaffner
DATE	3/15/11	3/16/11	3/16/11	3/16/11

OFFICIAL RECORD COPY

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

February 10, 2011

Participant	Affiliation
Sherri Ross	DOE Savannah River (DOE-SR)
Linda Suttora	DOE Headquarters (DOE-HQ)
Martin LeTourneau	DOE-HQ
Ginger Dickert	Savannah River Remediation (SRR)
Steven Thomas	SRR
Larry Romanowski	SRR
Rana O'Bryant	SRR
Mark Layton	SRR
Greg Flach	Savannah River National Laboratory
Gregory Suber	U.S. Nuclear Regulatory Commission (NRC)
Cynthia Barr	NRC
Christopher Grossman	NRC
George Alexander	NRC
James Shaffner	NRC
Roberto Pabalan	Center for Nuclear Waste Regulatory Analysis (CNWRA)
Mary Varga	South Carolina Department of Health and Environmental Conservation
David Watters	U.S. Army Corps of Engineers - EPA Consultant

Meeting Summary

Public Technical Exchange between the U.S. Nuclear Regulatory Commission and the U.S. Department of Energy Staff

February 10, 2011
1-2 p.m.

After introduction of participants, both U.S. Nuclear Regulatory Commission (NRC) and the U.S. Department of Energy (DOE) staff offered brief opening remarks affirming the purpose and desired outcome of the technical exchanges. Today's meeting was to focus on identification and agreement on key issues related to confidence in meeting NRC performance objectives and paths forward for resolution.

Ms. Sherri Ross reminded the participants that the F Area Tank Farm (FTF) Waste Determination will ultimately be a decision by the Secretary of Energy worked through and approved by DOE headquarters.

Ms. Cynthia Barr, NRC noted that in addition to the matrix provided prior to this meeting (NRC Table with Key Issue Resolution), the NRC was also developing a more comprehensive matrix detailing the NRC's key issues, priorities, and recommended path forward for resolution of the NRC comments. The more comprehensive matrix was still being drafted but the NRC does intend to share the information with the DOE when available.

Ms. Ginger Dickert discussed a perceived "philosophical difference between DOE and NRC approach to modeling and results analysis in order to garner confidence in compliance demonstration. She stated that the deterministic "base case" yields the best estimate of most likely dose. Further, this is true regardless of uncertainty (which may be large) analyzed with probabilistic models. It was her observation that NRC staff has a different approach to model results interpretation and confidence in conclusions. So far, it has been difficult to converge the dual philosophies and interpretations, in particular, how the two agencies are interpreting what the Base Case represents and how the uncertainty and sensitivity analysis (UA/SA) are being used to inform the Base Case results. It was noted that based on the NRC Request for Additional Information (RAIs), Clarifying Comments and the matrix recently provided, it appears that the NRC is viewing the Base Case as the "compliance" case which by itself must provide reasonable assurance that performance objectives will be met. Therefore, the Base Case should be a more conservative case and should have the uncertainties built in to the parameter selection. Ms. Ross pointed out that DOE does not consider the Base Case to be the "compliance" case but instead utilizes both the Base Case and the information provided by UA/SA to reach a determination that there is reasonable assurance performance objectives will be met. Ms. Dickert reiterated that the Base Case is intended to represent the best estimate of expected conditions and assumptions.

NRC staff indicated that it was not aware during its review of the Performance Assessment (PA) that DOE was using its probabilistic modeling strictly as part of its compliance demonstration. As a result, the NRC did focus on the Base Case and provided comments consistent with the assumption that the Base Case represented the compliance case. Mr. Martin Letourneau,

DOE-HQ, noted that perhaps additional discussion between the agencies would have been beneficial at making this clearer to reviewers.

NRC staff indicated that it does not think that sufficient support has been provided for DOE's compliance case (what DOE is referring to as the "best estimate"). Furthermore, NRC does not think that there is sufficient support for DOE's probabilistic modeling as part of a compliance demonstration in its current form, although NRC staff thinks that the probabilistic assessment is a valuable tool for sensitivity analysis to identify key parameters and processes.

Ms. Dickert asked if the main concern of the NRC was relative to technetium, plutonium, and neptunium and whether the peaks currently outside of the 10,000 year compliance period could occur during the 10,000 year compliance period if certain assumptions utilized in the Base Case were not correct. NRC confirmed that Tc, Pu, and Np appeared to be the risk drivers. NRC indicated that the doses from Tc and Pu are predicted in DOE's basecase analysis to be significantly over the performance limits (over an order of magnitude) at longer simulation time periods; however, NRC has concerns regarding the timing of peak doses and whether peak doses may have been prolonged due to overly optimistic assumptions regarding barrier performance. As an example, NRC noted that two barriers of primary concern in NRC's RAIs are steel liners and chemical barriers to waste release. Either of these two barriers can lead to a large delay in the timing of the peak dose (e.g., over 10,000 years each). Ms. Dickert stated that it would be beneficial to focus discussions, from NRCs perspective on key factors that potentially affect behavior of key radionuclides.

Ms. Barr noted that confidence regarding the assumptions with respect to key parameters and processes could be increased with multiple lines of evidence. It is not expected that all evidence can be produced through modeling nor is it realistic to expect that it all can be produced within the short time period allotted for RAI resolution. NRC staff noted that due to the fact that we are relatively early in the closure process, DOE has time to collect additional information to increase confidence in its compliance demonstration.

Mr. LeTourneau allowed that resolution of some concerns may not be timely but rather candidates for resolution during maintenance of the PA.

It was noted that NRC staff is in the process of completing a comprehensive table of concerns, degree of importance, and pathways to resolution. It was agreed that the completed table will be beneficial in reaching agreement on resolution pathways. It was decided, therefore, to table further discussion until the table was available.

NRC agreed to provide a version of the table in advance for discussion at the next public meeting on February 17, 2011.

DOE KEY ISSUES MATRIX

A	Tank Liner failure timing is optimistic in Base Case (Type I/III/IIIA tank failure times after 10k)	RAI-PA-1.3a (RAI-NF-16 etc.)	Perform PORFLOW sensitivity run (*) using base case (Case A), but allow the liners to fail early (year 75 for Type IV tanks, year 500 for other tanks).	NRC thinks that these modeling runs will provide limited additional information. These additional runs will generally just move the peaks forward in time but the peaks (e.g., 600 mrem/yr for Tc and 300 mrem/yr for Pu) will still occur beyond the period of performance. Since results have already been provided for longer simulation time frames, NRC can infer the results of these simulations without DOE executing the modeling run. **NRC does not recommend this additional run as currently proposed by DOE.**
B	None of the Alternate Configurations considered the scenario where the Contaminant Zone is not buffered by reducing grout	RAI-NF-15	Perform PORFLOW sensitivity run (*) using the Fast Flow case (Case D), but 1) increase the flow direct to the fast flow path by keeping the grout intact for 20k years and 2) don't allow any of the grout's reducing capacity to be imparted onto the CZ.	NRC would like to confirm that DOE plans to assume times to steel liner failure and basemat bypass consistent with Configuration D. It is also not clear what fraction of infiltration will be conducted through the fast pathway. Note, however, that Configuration D already shows a peak of the mean dose of 100 mrem/yr and rising at year 10,000 (and mean of the peak dose of 250 mrem/yr within 10,000 years). Thus, running a new Configuration D scenario with the CZ not conditioned by the overlying grout will likely lead to unacceptable results. Ultimately, NRC expects that additional information will be needed to address technical concerns regarding conditioning of the CZ by the overlying grout. **The modeling run may provide useful, additional information not already presented in the PA.**

C	Waste Release Model is important to Base Case but includes significant uncertainty (Fe co-precipitation, transition timing, percent CZ impacted)	RAI-PA-1.3bc,d (RAI-NF-9, etc)	Perform PORFLOW sensitivity run (*) using base case (Case A), but assuming Pu, Tc and U are not Fe co-precipitated. Proposed waste release model sensitivity run inputs provided in table below.	**NRC thinks that these modeling runs will provide limited additional information.** The peak doses are expected to be similar to the basecase. The timing of the peak dose is expected to occur earlier for Tc due to the earlier chemical transition but still beyond the period of compliance. Modeling runs to identify the solubility limit in the CZ that would lead to a dose at the compliance limit would provide useful information. These runs could be conducted for key radionuclides (e.g., Tc-99, Pu-239, Np-237, Ra-226, C-14, U).
D	Moisture characteristic curve modeling	CC-NF-9	Perform PORFLOW sensitivity run (*) using base case (Case A), except use moisture retention curves from the literature data suggested by NRC (same as HTF PA).	**This modeling exercise will be helpful if DOE could indicate what fraction of infiltration occurs thru the tank top and is transmitted through fractures and thru the matrix.**
E	Transfer Line Failure time non-conservative	RAI-PA-1.3b	No modeling required to support RAI response	**DOE could run Configuration F with various transfer line failure times to determine the minimum time period that the cover must be relied on as an independent barrier to mitigate impacts of short-lived radionuclides from the transfer lines.**

F	Dispersion model approach is non conservative	RAI-FF-3	Scoping study to assess impact of using different dispersivity values.	**Sensitivity analysis of the impact of dispersivities on modeling results is expected to provide useful information.** NRC also had general comments on benchmarking results that may indicate systematic bias in the PORFLOW modeling that could also be evaluated with additional modeling or extraction of modeling information from existing simulations. Additional information and/or modeling could close out the technical issues identified in RAI-FF-6.
G	Base Case inventory non-conservative for some radionuclides	RAI-PA-1.1a,b,c	No modeling required to support RAI response	**Additional modeling is not expected.**
H	Soft Zones not considered in modeling	RAI-FF-1 and others	No modeling required to support RAI response	**Acceptability of this approach is dependent on the information provided by DOE in response to NRC comment.** Modeling is one method that could be used to evaluate the impact of natural system uncertainty on the results of the analysis.
I	**Basemat Bypass**			**NRC included comments on the basemat Kds and on basemat by-pass that are not specifically addressed in this table.**
J	**Natural System Kds for key radionuclides**			**NRC included comments regarding Kds for C and Pu in the natural system based on experimental results. These concerns have not been listed by DOE.**

(*) Proposed Approach for non-base case PORFLOW sensitivity runs

- PORFLOW sensitivity run scope will be limited to same as Barrier analyses (Tanks 5, 18, and 33 for 8 important rads: Tc-99, Ra-226, Np-237, Pu-239, Th-230, U-233, U-234, and Am-241)
- PORFLOW sensitivity run will provide 100m concentration results
- Sensitivity run concentration results will be compared with FTF PA Rev 1 base case concentration results

	Issue	Related RAIs	Proposed Modeling Path Forward	NRC Analysis of Path Forward
				General Comment: There is a general lack of consideration of cumulative impacts of underperformance of multiple barriers to address NRC comments. RAI-PA-1 indicates that all of NRC's comments should be considered in determining whether the basecase is sufficiently conservative given the level of uncertainty inherent in the modeling assumptions. For example, NRC has concerns with lack of support for the time to failure (or transition times) for two barriers—the steel liner and chemical barrier. Either one of these barriers will cause a delay in the timing of the peak dose beyond the compliance period. On the other hand, modeling of multiple barrier failures will likely lead to non-compliance. Therefore, additional modeling runs alone are not likely to fully address NRC's technical concerns. NRC staff thinks that additional information could be collected during the monitoring period to reduce technical uncertainties to provide greater support for the compliance demonstration.