

September 23, 2011

NOTE TO: File PROJ0734

FROM: James Shaffner, Project Manager/**RA**/
Low-Level Waste Branch
Environmental Protection
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Division of Waste management
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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 REQUESTS
FOR ADDITIONAL INFORMATION RELATED TO CLOSURE OF F-TANK
FARM, SAVANNAH RIVER SITE

On July 21, 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 and the 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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DATE	9/16/11	9/21/11	9/22/11	9/23/11

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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 21, 2011

Participant

Sherri Ross
Brent Gutierrez
Linda Suttora
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Summary

Teleconference Between the U.S. Nuclear Regulatory Commission and the U.S. Department of Energy Staff

July 21, 2011

The purpose of the teleconference was to clarify issues related to analysis of Far Field Behavior and Analysis.

RAI-FF-3

Discussion:

The U.S. Nuclear Regulatory Commission (NRC) noted the usefulness of the Request for Additional Information (RAI) response in evaluating the impacts of dispersivity on the modeling results and showing that the level of numerical dispersion for the given dispersivity was at an acceptable level. There was some follow-up discussion regarding the appropriateness of the dispersivity used in the F-Tank Farm (FTF) model and the reliability of calibrated dispersivities used in various SRS studies. The U.S. Department of Energy (DOE) noted that it selected the F- and H-Area seepage basin models and calibrated dispersivity values due to representativeness and good source term and monitoring information.

The NRC asked if due to preferential flow of contaminants from the seepage basins to surface water the dispersivity values for the seepage basins could overestimate the dispersion that might be expected from flow paths from FTF. NRC also noted that calibration to break through curve data might provide less reliable estimates of dispersivities compared to calibration based on three-dimensional plume spread.

The DOE indicated that the heterogeneity captured in the PORFLOW model was limited or moderate related to the coarseness of the mesh. The DOE also walked through additional information in the RAI response that investigated limitations of the PORFLOW model in assigning variable transverse dispersivities and in assigning longitudinal dispersivities when flow is primarily in the vertical direction.

The NRC noted that the selection of a lower dispersivity or lower numerical dispersion could offset PORFLOW modeling conservatisms related to failure of multiple tanks at the same time (factor of around 3 difference in peak dose).

Status:

NRC indicated that recommendations to further study modeling treatment of dispersivity might be made in the Technical Evaluation Report, although the NRC has no major concerns in this area.

RAI-FF-4 and CC-FF-9**Discussion:**

NRC sought additional clarification on follow-up work related to Pu and calcareous zone sorption. DOE had not foreseen the calcareous zones as an area of interest and would need to better understand the risk-significance on a radionuclide-specific basis before studying the issue further. NRC noted that the concerns with Pu Kd assignments were more along the lines of modeling treatment (complexities associated with reactive transport modeling and varying mobilities of Pu species), rather than the need for additional Kd experiments. Nonetheless, the NRC noted that the DOE response to CC-NF-9 was helpful.

Status:

No further clarification is required.

RAI-FF-5**Discussion:**

DOE clarified that the point of maximum exposure in the Gordon aquifer was beyond 100 meters for at least some FTF sources. DOE indicated that the factor of twenty lower concentrations in the Gordon aquifer was nonetheless expected to be conservative for concentrations beyond 100 meters and that DOE selected the 100 meter location because it was the point of maximum exposure in the Upper Three Runs (UTR) aquifer (assumes only one location should be selected from realization to realization in the probabilistic analysis although various aquifers locations could be selected from realization to realization). NRC reiterated its position expressed in FTF scoping that the point of maximum exposure (both horizontally and vertically) should be used as the basis for comparison against dose-based standards found in 10 CFR Part 61, Subpart C (i.e., only UTR aquifer concentrations and doses should be used to demonstrate compliance). Information regarding the probability of well completion in the Gordon aquifer is useful risk information and both sets of results may be presented in NRC's TER.

Status:

No further clarification is required.

RAI-FF-6**Discussion:**

NRC acknowledged the excellent explanation of the model benchmarking process in the RAI response that clarified some of the inaccuracies in the Performance Assessment (PA) documentation and clearly showed how benchmarking adjustments could be made to account for flow and transport differences in the two models. NRC noted that the physical basis for some of the benchmarking adjustments was still not clear, however, such as the use of a clay fraction for sources and plumes that were not expected to intersect the clayey GCU, while no

clay fraction was assigned for sources and plumes that might be expected to intersect the clayey GCU. NRC was also not clear on the order in which benchmarking adjustments were made and expressed lingering confusion on use of offsetting adjustments in the actual FTF benchmarking process. DOE acknowledged that flow model abstractions could have been more elegant and straightforward and that improvements in the process are ongoing. DOE explained its conclusion that the impact of assigning a porosity of $1E-20$ for sandy soils in the GoldSim model is significant.

Related to the CC-UA-3 response, the NRC staff expressed lingering concerns with possible model biases between the PORFLOW and GoldSim models. DOE acknowledged that the Goldsim appears to be biased high but thinks this is due primarily to assigned parameter distributions and not due to differences between the models. When NRC indicated that the Tc doses could be an order of magnitude higher in the GoldSim model compared to the PORFLOW model and that result could be due to additional dispersion in the PORFLOW model than represented in the GoldSim model, DOE recalled that benchmaking to Tc flux from the tanks was good, suggest that differences between the two models are likely far-field related rather than near-field. DOE also indicated it believes that differences between the two models are not indicative of the PORFLOW results being inherently biased low. DOE discussed some examples of differences between the two models (e.g., the FTF GoldSim model has limited vertical dispersion compared to the FTF PORFLOW model) that could explain dose variances. NRC will continue to look into this issue to try and explain the apparent differences between the two models that appears to approach an order of magnitude for highly soluble, mobile constituents.

Status:

NRC has continuing concerns regarding possible model biases and will continue to seek an explanation.