Summary Notes from 8-9 May 2007 Savannah River Site F-Area Tank Farm Performance Assessment Input Meeting

Attendees: Representatives from Department of Energy-Savannah River (DOE-SR), DOE-Headquarters (DOE-HQ), the U.S. Nuclear Regulatory Commission (NRC), the South Carolina Department of Health and Environmental Control (SCDHEC) and the U.S. Environmental Protection Agency, Region IV (EPA-IV) met at the SCDHEC offices in Columbia, South Carolina from 8-9 May 2007.

Discussion: DOE is pursuing final closure on the F-Area Tank Farm (FTF) located at Savannah River Site (SRS). At some point in the future, DOE and NRC will consult on waste determinations for these tank closures; additionally these tanks will be closed in coordination with EPA and SCDHEC in accordance with the Federal Facility Agreement for the Savannah River Site and the State-approved closure plans pursuant to the State Industrial Wastewater permit. The DOE, NRC, EPA, and SCDHEC met for the fourth in a series of technical exchanges on the proposed inputs for a revision to the FTF Performance Assessment (PA). The technical exchanges are intended to capitalize on early interactions between the agencies with a goal of improving DOE's FTF PA. Technical discussions allowed for the clarification of general modeling parameter values and identifying other specific questions.

Topics: The following three specific topical areas were discussed during the meeting:

1. Bioaccumulation Factors/Consumption Rates – DOE's proposed approaches for developing Bioaccumulation Factors (i.e., transfer factors) and Human Health Exposure parameters (i.e., consumption rates), as a follow-up to the initial FTF PA inputs package discussion which occurred in February 2007.
2. Dose Conversion Factors - DOE's proposed set of Dose Conversion Factors (DCFs) to be used in dose calculations for the F-Area Tank Farm (FTF) Performance Assessment (PA) modeling.
3. Integrated Conceptual Model - DOE's proposed integrated conceptual model to be used for evaluating the performance of the F-Tank Farm (FTF) closure system during the 10,000-year period following FTF closure, which will be used to evaluate the migration of contaminants from the FTF.

Summary: The following summarizes the discussion during the meeting, by topical area.

Bioaccumulation Factors/Consumption Rates

- DOE plans to provide clarification in its input package for bioaccumulation factors and consumption rates for the FTF PA that identifies the source of percent leafy vegetable production assumption that will be used in the scenarios.
- DOE plans to provide clarification in its input package for bioaccumulation factors and consumption rates for the FTF PA as to why using geometric mean is appropriate in determining values used for certain uptake factors.
- DOE plans to add a statement in its input package for bioaccumulation factors and consumption rates for the FTF PA explaining how ranges were derived for all Bioaccumulation Factor/Consumption Rate values. DOE also plans to verify that the units for bioaccumulation factors in source documents (i.e., dry weight or wet weight basis) are appropriately accounted for in DOE unit conversion calculations and summary tables in the input package (in particular, for values derived from the International Commission on Radiation Protection).

Dose Conversion Factors

- DOE plans to provide clarification in the dose conversion factors input package for the FTF PA by moving the explanation of how inhalation dose factors were chosen from the footnotes into the text.
- DOE plans to clarify in the dose conversion factors input package for the FTF PA that no newer external DCFs are available than the ones cited.

Integrated Conceptual Model

- DOE plans to provide a discussion in the integrated conceptual model inputs package for the FTF PA that clarifies grid discretization and the sufficiency of the grid resolution to model release of the source from discrete components in the grouted tank system and to prevent artificial dispersion of contamination during transport through the vadose zone and saturated zone to the point of exposure.
- DOE plans to ensure that the proposed steel liner failure analysis for the FTF

PA appropriately documents and addresses factors important to corrosion, such as: initial conditions, variable chemical conditions as a result of grout degradation, formation of preferential pathways at the interface of the steel line and grout, definition of failure time; galvanic corrosion and stress corrosion cracking; temperature and humidity effects; chloride concentrations in the vadose zone; deposits in annulus; radiolytic decomposition; corrosion rates of welds vs. plates; microbial induced corrosion (MIC); and site-specific conditions that validate general corrosion assumption.

- DOE plans to explain how grout degradation modeling (e.g., as it affects the chemical conditions within the tank, the permeability of materials through which deleterious species affecting steel liner corrosion travel, and the permeability of materials) is coupled with assumptions regarding steel liner failure.
- DOE plans to address the potential for and information associated with water table fluctuations in the Integrated Conceptual Model for the FTF PA.
- DOE plans to address the uncertainty of values used in the steel liner analysis for the FTF PA.
- DOE plans to evaluate a matrix of scenarios for waste release representing contact of the steel liner with grout and with the environment with and without preferential flow pathways to evaluate alternative conceptual models for waste release. DOE also plans to evaluate the likelihood and applicability of the various release scenarios to site-specific conditions at the site to justify the selection and elimination of scenarios evaluated.
- NRC staff stated that a separate conceptual model for release of waste from the tank walls and within the annular region of the vaults should be considered in lieu of assuming all the waste was located at the bottom of the tanks with one set of parameter values controlling waste release from the concrete basemats.