

INTEROFFICE MEMORANDUM

SRR-CWDA-2015-00117

Revision 0

September 1, 2015

TO: L. B. Romanowski, 705-1C

FROM: M. H. Layton, 705-1C *MHL 9/1/15*

REVIEWED BY: *[Signature]* *9/2/2015*
J. E. Mangold, 705-1C

**Follow-Up Information for Action Item 12 from the U.S. Nuclear Regulatory Commission
F and H Area Tank Farms Onsite Observation Visit on July 28-29, 2015**

During the onsite observation visit by the U. S. Nuclear Regulatory Commission (NRC) on July 28-29, 2015, the NRC requested the following information, captured as Action Item 12, be provided as follow-up to the visit:

12. DOE to provide NRC information on how pore water chemistry is assigned to case selection (GoldSim Probabilistic)

The information requested by the NRC was in reference to how the H-Tank Farm (HTF) Goldsim probabilistic model addresses contamination zone (CZ) reducing capacity for the fast flow configurations (D and E).

The HTF GoldSim Model samples five different waste tank cases (Cases A through E). In addition, a set of flow fields calculated in PORFLOW for each model segment (e.g., grout, CZ, basemat, primary and secondary liners, annulus) are used as input to the HTF GoldSim Model. The stochastic simulations use this set of flow-fields to sample from, dependent upon the configuration selected.

The chemical state (e.g., Reduced Region II, Oxidized Region II, etc.) of a model segment controls the selection of the solubilities and K_d s applied to the different radionuclides present within that segment. Changes to a segment's chemical state are implemented in GoldSim by means of chemical transition times. These chemical transition times (i.e., years of occurrence) are calculated in the HTF PORFLOW model based on:

- 1) flow rate (which is dependent upon which flow case is sampled),
- 2) the pore volume for the model segment under consideration, and
- 3) the number of pore flushes required for a chemical transition to occur (see Table 5.6-16 of the HTF Performance Assessment (SRR-CWDA-2010-00128)).

These years of occurrence calculated by the HTF PORFLOW model are then used as inputs to the HTF GoldSim probabilistic model.

Reference

SRR-CWDA-2010-00128, *Performance Assessment for the H-Area Tank Farm at the Savannah River Site*, Savannah River Site, Aiken, SC, Revision 1, November 2012.

cc: K. H. Rosenberger, 705-1C S. P. Hommel, 705-1C