

Hanford Waste Management Area C WIR Evaluation 10-02-2018 DOE-NRC Teleconference Summary

Department of Energy (DOE) Attendees: Sherri Ross (DOE-HQ), Jan Bovier (DOE-ORP)

Nuclear Regulatory Commission (NRC) Attendees: David Esh, Hans Arlt, Lloyd Desotell

DOE Contractor Attendees: Marcel Bergeron (WRPS), Doug DeFord (WRPS), Sunil Mehta (INTERA), Matt Kozak (INTERA), Paul Rutland (WRPS), Keith Quigley (Veolia), Kent Rosenberger (SRR), David Thorn (Portage), Jim Field (WRPS), DJ Watson (WRPS)

Member of the Public Attendees: None

The following topics regarding NRC's review of the Draft Waste Incidental to Reprocessing (WIR) Evaluation for Closure of Waste Management Area C (WMA C) at the Hanford Site were discussed during an October 2, 2018 teleconference. While the intent was for this teleconference be open to the public, the call in information was not posted on the following DOE Hanford webpage (<https://www.hanford.gov/page.cfm/WasteManagementAreaC>) prior to the call in time.

REMOVAL TO EXTENT PRACTICAL

1. The removal of key radionuclides from plugged pipelines was discussed. DOE stated that there is not a practical method to identify the locations where pipelines are plugged and are not intending to attempt to additional clear the pipelines beyond that already conducted during WMA C operations. NRC stated that additional detail regarding why no further action is practical may be needed.
2. The definition of key radionuclides when the simulated doses after closure are very low was discussed. NRC suggested DOE consider the intruder scenario when defining key radionuclides.
3. The removal of key radionuclides from tanks and ancillary equipment was discussed. DOE stated that the focus was on the bulk waste removal rather than the use of technologies that target the removal of specific radionuclides. DOE stated that technology selection had to consider potential downstream impacts as discussed in Section 4.3 of the Draft WIR Evaluation (DOE/ORP-2018-01, Draft D). NRC stated that it may request DOE to provide additional details regarding the percent removal of key radionuclides for each unit (tank, piping, other ancillary equipment) that considers the phases (solid, liquid) that the key radionuclides are present in.
4. The apparent spike (increase) in removal efficiency at the end of the retrieval campaign for Tank 241-C-107, as shown in Figure 4-14 of the Draft WIR Evaluation, was discussed. DOE stated that the spike in the figure is simply the result of lowering the pump within the tank to remove the remaining waste.

5. Waste retrieval results for tank C-108 were discussed. DOE stated that most of the waste was removed with DST AN-106 supernate. DOE stated that other supernates were not tried, as they cost millions of dollars and years of time. WIR evaluation Figure 4-17 was discussed with respect to the influence of risers on residual waste. DOE stated that installing new risers in a tank could cost up to 5 million dollars. DOE indicated that additional risers have been installed in some tanks to facilitate cleaning. Chemical cleaning of Tank C-108 was discussed. DOE stated that the process used to terminate cleaning is presented in Section 4.3.3.8.2 of the WIR evaluation.
6. The effectiveness of chemical cleaning of Tank C-109, as presented in Figure 4-22 of the Draft WIR Evaluation, was discussed. NRC asked if the limit of technology had been reached for cleaning this tank. DOE indicated that the graphs show that the hold time (the time required to achieve sufficient chemical reaction) was sufficient. DOE stated that they relied on the experience and expertise of the engineers. NRC stated that their question about the chemical cleaning of Tank C-109 wasn't associated with hold time but with how many cycles of chemical cleaning.
7. The removal of waste from Tank C-110 was discussed. DOE stated that when the existing equipment could not mobilize waste the mobile retrieval tool (MRT) was deployed. DOE further stated that the MRT was not replaced after it developed a leak because waste retrieval was nearly complete. DOE indicated that the waste is friable and can be pushed by the MRT but is difficult to remove with the pumps.
8. NRC asked if a cumulative removal chart for Tank C-111 was available. DOE stated that a cumulative removal chart for Tank C-111 has not been developed. NRC stated that this information may be requested to demonstrate key radionuclides have been removed to the extent practical.
9. NRC asked if data were available that shows the initial and final solids volumes of each tank. DOE stated that, similar to the response to item 3 above, they focused on bulk waste removal and referenced Section 4.3.1 of the Draft WIR Evaluation. DOE stated that the information could be generated but it has not at this point.
10. NRC asked DOE to provide the rationale for the selection of particular technologies for removal. DOE stated the rationale was presented in Section 4.3.1.1 of the Draft WIR Evaluation and RPP-PLAN-4015. Also, DOE will send NRC additional tank specific technology selection information.
11. NRC asked about the total annual operating budget for WMA-C. DOE stated that approximately 765 million dollars have been spent on operations at WMA-C over the course of 20 years, or on average \$38 million/year.

WASTE CLASSIFICATION

12. The waste classification calculations presented in Section 6 of the Draft WIR Evaluation were discussed. NRC indicated that the waste classification concentrations provided in

10 CFR Part 61 included the assumption that not all waste would be disposed of at the waste classification limits. Therefore, if intruder doses were used to scale concentrations for a draft WIR evaluation the assumption shouldn't be included. DOE indicated that they based their approach on what was done for the Savannah River Site and that was formulated based on Appendix B of NUREG-1854. NRC stated that they (NRC) needed to review the consistency of approaches presented in NUREG-1854 (e.g., Appendix B) and that this topic should be revisited on a future call.

13. The grout formula DOE intends to use in the tanks and ancillary equipment was briefly discussed. NRC asked how DOE intends to incorporate the residual waste into a solid physical form if some of the waste is liquid. DOE stated that the grout design is not complete but that it will likely be similar to that used at other sites (e.g., SRS or INL) and that there may be a contingency to include additional dry cement if liquids are present in tanks. DOE indicated that free liquids are adsorbed during cement hydration reactions.
14. NRC stated that, for completeness purposes, the classification of all ancillary structures included within the scope of the Draft WIR Evaluation, including pits, diversion boxes, and plugged pipelines should be provided. DOE agreed.
15. NRC will review the information related to waste removal provided in this teleconference and determine whether additional follow-up is needed regarding 2009 NRC RAI comment #24 (Accession Number ML090090030).

Action Items

Item Number	Date	Action	Status
9-6.3a	9-6-18	NRC to provide GoldSim run log to DOE	Completed 9-25-18
9-6.3b	9-6-18	DOE to provide NRC with GoldSim model for 400,000 year simulation	Completed 9-27-18
9-6.5	9-6-18	DOE to provide additional details regarding the scaling for other uranium isotopes	pending
9-6.6	9-6-18	DOE to provide the aqueous relative permeability parameters assigned in STOMP model	pending
9-6.8	9-6-18	DOE to provide map showing the location of node 69 in relation to the tank footprint	pending
9-6.9	9-6-18	DOE to provide a water budget table with inflow at the surface and inflow/outflow at the four aquifer boundaries	pending
9-6.12	9-6-18	DOE to provide the simulated hydraulic heads from the STOMP model for the monitoring wells as seen in PA Fig. C-11, page C-22	pending
9-6.14	9-6-18	Future presentation on Leapfrog geological model	pending
9-6.15	9-6-18	DOE to check the discrepancy between 580 m ³ /d on PA p. C-8 and 730 m ³ /d on p. C-12.	pending
9.6.16	9-6-18	DOE to provide the simulated hydraulic heads from the CPGW model for the monitoring wells as seen in PA Fig. C-11, page C-22	pending

10-2.10	10-2-18	DOE to send information on tank specific retrieval technology selection information	pending
10-2.12	10-2-18	NRC to check information in NUREG 1854 #12	pending
10-2.a	10-2-18	DOE to check public call in information posted on website.	pending

Acronyms and Abbreviations

DST	double-shell tank
DOE U.S.	Department of Energy
DOE-ORP	U.S. Department of Energy Office of River Protection
DOE-HQ	U.S. Department of Energy Headquarters
INL	Idaho National Laboratory
MRT	mobile retrieval tool
NRC	US Nuclear Regulatory Commission
PA	performance assessment
PNNL	Pacific Northwest National Laboratory
SRR	Savannah River Remediation
SRS	Savannah River Site
SST	single-shell tank
WIR	waste incidental to reprocessing
WMA	waste management area
WMA C	Waste Management Area C
WRPS	Washington River Protection Solutions, LLC