

Hanford Waste Management Area C WIR Evaluation 11-07-2019 DOE-NRC Teleconference Summary

By letter dated April 30, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19112A091), the Nuclear Regulatory Commission (NRC) issued a Request for Additional Information (RAI) to the Department of Energy (DOE) regarding its Draft Waste Incidental to Reprocessing (WIR) Evaluation for Closure of Waste Management Area C (WMA C) at the Hanford Site. The DOE provided its responses to these RAIs by letter dated October 23, 2019 (ADAMS Accession No. ML19305A296).

On October 29, the DOE held a public meeting with its contractors and the NRC in Richland, Washington to discuss its responses to the NRC RAI. During this meeting, the NRC identified RAI responses that would need further discussion, and as a result, the DOE established three public teleconferences to continue these discussions. The teleconference described below was the second of those teleconferences. Call-in information was posted on the DOE Hanford WMA C webpage (<https://www.hanford.gov/page.cfm/WasteManagementAreaC>) prior to the call.

The following parties attended the teleconference:

- DOE: Sherri Ross
- NRC: Lee Gladney, David Esh, Hans Arlt
- Washington River Protection Solutions (WRPS): Doug DeFord, Marcel Bergeron, Paul Rutland, Jim Field, Dan Parker, Bob Hiergesell
- INTERA: Sunil Mehta, Matt Kozak
- TecGeo: Mike Connelly
- CH2M Hill Plateau Remediation (CHPRC): Bill McMahon
- Mission Support Alliance (MSA): Jenifer Colborn
- Veolia: Keith Quigley, Dave Thorne
- Public: Earl Fordham (State of Washington), Nez Perce Tribe representative, Dan Solitz

Discussion

The RAI responses discussed during this teleconference were 2-14, 2-15, 2-2, and 3-2. A summary of the discussion is provided below. The RAI comment is briefly summarized followed by a summary of the NRC staff's clarifying questions and the associated discussion during the teleconference. The reader of this teleconference summary should refer to documents above for the full text of the RAIs and DOE's response to the RAIs.

RAI 2-14

This RAI was related to DOE's approach to sensitivity and uncertainty analyses. In its RAI, the NRC requested that the DOE perform a global sensitivity analysis combining both parameter and model/conceptual uncertainty.

- During the teleconference, there was a discussion between the NRC staff and DOE regarding whether Chapter 8 of the WMA-C Performance Assessment (PA) was an accurate representation of uncertainty. The NRC staff asked if the ranges for various parameters used in the uncertainty analysis included not only likely parameter values but also less likely but plausible values. DOE stated that the range of parameter values used in the uncertainty analysis was specific to the Hanford site, and that "plausible" values do not necessarily include everything theoretically possible.

- The NRC asked if the K_d values used in the uncertainty analysis, as seen in the WMA C PA Table 8-6, were gravel-corrected. The DOE indicated that they were and that they could be seen in the GoldSim model.
- NRC staff asked DOE if they had confidence in the vadose zone hydraulic properties being obtained from the van Genuchten-Mualem constitutive relationships using laboratory-derived soil-moisture retention and unsaturated hydraulic conductivity datasets. A discussion on upscaling and anisotropy followed. DOE stated that much effort had gone into obtaining the vadose zone hydraulic properties and much data had been collected, so they were very confident in the results.
- NRC staff asked about the disparity between the relatively small change seen from using the 95th percentile vadose zone parameter values (WMA-C PA Table 8-18) and the number one ranking for the vadose zone hydraulic properties/uncertainties, or Hyd_Prop_Uncert, in Table 8-13(b) in the WMA-C PA. DOE explained that Table 8-13 is showing the results of something more similar to an importance analysis and cannot be so easily compared with the results of the sensitivity analysis.
- NRC staff questioned some of the conclusions in Section C.4 in the WMA C PA. NRC questioned the uncertainty ranges associated with saturated zone parameters. DOE indicated that it acknowledged uncertainty on p. 8-30 and elsewhere, and that the hydraulic conductivity range already encompasses hydraulic gradient and aquifer thickness uncertainty. DOE indicated they are concerned with total flow through the aquifer and that changes in hydraulic parameters can't be done independently.

RAI 2-15

This RAI was related to DOE's approach to capture all important sources of uncertainty in the estimates of radionuclide inventory remaining in waste residuals. In its RAI, the NRC requested that the DOE provide a full uncertainty evaluation for radionuclide inventory and sampling results that support the assumption that the composition of waste sampled is representative of material that can't be sampled.

- During this teleconference, the NRC staff asked clarifying questions associated with the development of the waste inventory. The NRC staff asked for clarification as to whether additional uncertainty differentiating the wall composition of waste from the floor composition was included in the uncertainty estimate. DOE indicated that additional uncertainty was not included but that they believe the composition of the waste on the walls would be similar to the waste on the floor of a tank, following the extensive washing cycles inherent in the waste retrieval process.
- The NRC staff sought clarification on the relative standard deviation (RSD) values provided in the inventory reports. DOE indicated that they would need to review the calculations and get back to NRC. NRC stated they would provide follow up via email (to Field from Esh (NRC)) on this topic.

RAI 3-2

This RAI was related to DOE's calculations for Class C low-level waste and that not all components remaining in WMA C were classified. In its RAI, the NRC requested that the DOE revise the waste

classification calculations and provide classification of the diversion boxes, pits, and plugged pipelines.

- During the teleconference, the NRC staff asked if DOE was relying upon 10 CFR 61.58 for alternative methods to waste classification. DOE indicated that at the present time they were not; the material was provided for information purposes only.
- NRC staff asked if DOE would provide the document they referenced associated with the sum of fractions for short- and long-lived radionuclides. DOE indicated they would provide the document to NRC.

RAI 2-2

This RAI was related to DOE's description of the identification of viable alternative conceptual models and alternative future scenarios, and DOE's current safety function methodology that may not be able to identify interdependencies and interrelationships between Features, Events, and Processes (FEPs) that could result in plausible alternative conceptual models or future scenarios.

- During this teleconference, the NRC staff asked DOE to clarify how its approach or methodology would identify interdependencies and interrelationships that may lead to plausible alternative conceptual models or future scenarios, as well as provide information regarding how each safety function is relevant to performance and safety. DOE indicated they used the judgement of experts to identify safety functions that are relevant to safety and affect performance. These safety functions were then included in the sensitivity and uncertainty analyses and these analyses clearly showed their relative performance and demonstrated their overall contribution to isolating the wastes.
- The NRC staff asked for clarification as to why completed FEPs analysis could not be used to identify plausible conceptual models and scenarios for inclusion into the performance assessment. DOE replied that the amount of time and effort required to construct plausible alternative conceptual models and alternative scenarios from the results of the completed FEPs analysis would not be commensurate with the possible benefits obtained and that any possible safety or performance issues associated with one or more of the parameters would be identified in the comprehensive sensitivity and uncertainty analyses.

An opportunity for public comment was provided at the end of the call. There were no public comments.

Action Items

- The NRC will provide DOE access to BOX for uploading files. (Complete).
- DOE will evaluate information NRC provides regarding relative standard deviation and provide a response for RAI 2-15. (Complete)
- DOE will provide a document indicating that the sum of fractions should not be combined to support RAI 3-2. (Complete)
- The NRC will place additional DOE responses to RAIs in ADAMS Accession No. ML20042C425. (Complete)