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NOTE TO: File PROJ0734

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SUBJECT: SUMMARY OF A PUBLIC MEETING BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION STAFF AND THE U.S DEPARTMENT OF ENERGY STAFF AND CONTRACTORS CONCERNING REQUESTS FOR ADDITIONAL INFORMATION RELATED TO A PROPOSED WASTE DETERMINATION FOR CLOSURE OF H-AREA TANK FARM AT THE SAVANNAH RIVER SITE; AND A CONSULTATION SITE VISIT BY NRC STAFF TO H-TANK FARM

On June 5, 2013, the U.S. Nuclear Regulatory Commission (NRC) staff convened a public meeting with the U.S. Department of Energy (DOE) technical staff and contractors. The meeting was held at the Village Center, 230 Village Green Blvd., DOE Suite 220, Aiken, SC. The purpose of the meeting was to allow NRC staff to inform DOE staff of the categories of forthcoming Requests for Additional Information (RAIs) which NRC staff anticipates submitting to DOE in July 2013. DOE responses to the RAIs will allow NRC to complete a Technical Evaluation Report (TER) regarding the draft basis for closure of H-Tank Farm (HTF) and related performance assessment as part of the NRC's consultation responsibility per Section 3116 of the Ronald W. Reagan National Defense Authorization Act of 2005.

On June 6, 2013, NRC staff visited and toured the HTF and related facilities. Following the tour, NRC and DOE staff conducted brief technical discussions on two topic areas: (1) challenges related to removing highly radioactive radionuclides from tank annuli, and (2) aspects of DOE's HTF performance assessment Goldsim model.

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In addition to the public meeting and site visit, NRC staff also held a series of teleconferences with DOE staff to seek clarification of several technical issues related to HTF. DOE responses will facilitate NRC review of the draft basis documentation and subsequent preparation of the TER.

Docket No. PROJ0734

Enclosures:

1. Summary of June 5 Public Meeting and June 6 Technical Discussions
2. June 5 Public Meeting Participants
3. NRC June 5, 2013 Slide Presentation
4. NRC Clarification Questions (April-May 2013) and Summaries of DOE Responses
5. June 6 Site Tour and Technical Discussion Participants
6. H-Tank Farm NDAA Section 3116 Draft Basis Document NRC Consultation Visit, SRR-CWDA-2013-00080, Rev. 0

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Summary

Public Meeting between the Nuclear Regulatory Commission and U.S. Department of Energy Staff regarding H-Area Tank Farm Section 3116 Consultation

June 5, 2013

9:30 a.m. – 4:00 p.m. (scheduled, meeting actually concluded at 3:00 p.m.)

Both the U.S. Nuclear Regulatory Commission (NRC) and the U.S. Department of Energy (DOE) staff offered brief opening remarks affirming the purpose and desired outcome of the meeting. NRC staff provided a brief summary of the NRC's role in the consultation process per the Ronald W. Reagan National Defense Authorization Act of 2005 (NDAA) and the three criteria that are addressed in the Secretary of Energy's waste determination. The criteria relate to the need for deep geologic disposal, removal of highly radioactive radionuclides to the maximum extent practical, and the ability to meet NRC performance objectives for low-level waste disposal contained in 10 CFR Part 61.

The remainder of the meeting focused on the contents of a power point presentation by NRC technical staff (Enclosure 3). During the presentation, NRC staff summarized previous technical interactions (teleconferences) in which NRC staff posed clarifying questions and DOE provided responses by telephone. Public summaries for these interactions have been or will be provided. Further detail related to the discussions is contained in Enclosure 4.

The first Request for Additional Information (RAI) area that NRC discussed was radionuclide release and near field transport. This area relates to behavior of the waste containment system in the immediate vicinity of the tanks. Categories of interest include cementitious material degradation, steel corrosion, source term release, and near field flow and transport modeling. During the discussion DOE staff asked clarifying questions and inquired as to the sources of clarifying information.

The second RAI area was hydrology and far-field transport. This relates to mechanisms for groundwater and contaminant movement to potential receptors. Categories of interest include model calibration (results, targets, and process), and compliance boundary. There are numerous challenges to model calibration associated with site complexity, stratigraphy, and data limitations. Establishment of a compliance boundary will affect potential doses to both an inadvertent intruder and to a potential member of the public residing 100 meters down gradient from the disposal facility.

The third RAI area relates to NDAA Criterion 2 which requires removal of highly radioactive radionuclides to the maximum extent practical. Categories of interest include radionuclide inventory remaining in tanks and ancillary facilities and the effort and strategy that was employed to address their removal to the maximum extent practical.

As previously stated, NRC staff's detailed points of discussion can be found in Enclosure 3. Related NRC clarification questions and summaries of DOE responses can be found in Enclosure 4.

During the June 5, 2013 public meeting, there were two opportunities for public input. One member of the public expressed concerns regarding overall budget limitations at the Savannah River Site, and stated that the budget should be directed exclusively to waste management activities. The member of the public also asked about how documentation in a meeting summary from the F-Area Tank Farm (FTF) related to shrinkage gaps at the tank perimeters is considered in H-Area Tank Farm (HTF). NRC staff responded that the concerns were considered on Slide 12 of its presentation (Enclosure 3). Finally, the member of the public inquired whether removal to the maximum extent practical is a decision considered at a point in time or on a continuing basis. NRC staff responded that removal to the maximum extent practical is based on the information available at the time of the decision.

Another member of the public questioned the degree to which budget limitations may impact removal of radionuclides to the maximum extent practical. A DOE representative responded that funding challenges would not impact ultimate removal effort but may impact timeliness. The DOE representative also noted that DOE was on schedule to meet current commitments.

On June 6, 2013, DOE representatives provided an in-brief for the NRC staff tour of the HTF and related facilities (Enclosure 6). The tour included a walk down of the tank farm operations from key vantage points. Explanations were provided regarding the use of evaporators, diversion boxes and transfer lines to move, manage, and reduce liquid waste volume. Efforts to gain access to and better understand waste contained in tank annuli (i.e., Tank 16 sampling efforts) were also explained. The tour also included a visit to ground water monitoring well complex P27, one of the locations from which dissolved oxygen data is gathered.

Following the tour, NRC, and DOE staff met to continue discussions regarding challenges associated with quantification and removal of contaminants within the tank annuli. Discussion focused on Tanks 9, 10, 14, and 16. DOE estimates that Tanks 9, 10 and 14 annuli currently contain about 3,800 gallons, 1,100 gallons, and 5,600 gallons of material respectively. At this time, annulus cleaning activities have not been carried out on these tanks. In the HTF performance assessment 3,300 gallons is assumed for the final inventory of each of these three tanks after completion of annulus cleaning activities. In response to a follow-up on a clarifying question regarding annular volume estimates for Tanks 9, 10, and 14 from the May 16, 2013, teleconference (ADAMS Accession No. ML13193A072). DOE indicated that there is incomplete visual coverage of the tank annuli in these three tanks and that they were unable to confirm that the mounds of residual waste taper off as was suggested during the May 16, 2013, teleconference. The current estimated volumes of 3,800 gallons, 1,100 gallons, and 5,600 gallons assumes a relatively consistent depth of waste throughout the annulus. DOE indicated that it expects to be successful at cleaning Tanks 9, 10, and 14 annuli with traditional cleaning methods because that material is expected to be more soluble than the residual material in Tank 16, as discussed below. The current estimate of the volume of waste in the Tank 16 annulus, after cleaning activities, is 3,300 gallons.

Tank 16 is unique in that it was subject to significant leakage into the annulus in its early days of operation and DOE had introduced sand into the annulus as part of a sandblasting efforts associated with tank inspections. The rapid nature of the leakage combined with the introduction of the sand from sandblasting as well as high heat from steam jets during a previous removal campaign causes DOE to believe that the residual material in the Tank 16 annulus is chemically different from other tanks that have experienced leakage into the annulus.

During the discussion, DOE indicated that the residual material in the annulus (outside of the annular ventilation duct) is expected to have limited solubility, which would make further cleaning of the Tank 16 annulus difficult. The situation is exacerbated by the presence of residual material within the ventilation ductwork within the tank annulus. Because the residual material within the duct was not exposed to sand, DOE expects it to be more soluble. However, DOE indicated that limited access to the duct presents challenges for removal of the material contained within the duct. DOE indicated that it conducted a mock-up of traditional cleaning methods for the Tank 16 annulus and concluded that further cleaning with traditional methods would be limited. Based on the mock-up, DOE indicated that, while sluicing technologies (e.g., hydrolancing) would mobilize residual solids, aerosolization of the waste is a nuclear safety concern. DOE also stated that alternative cleaning technologies (e.g., robotic arm) are not sufficiently mature at this time. During the discussion on annular contamination, NRC mentioned that the benefits of additional removal from the Tank 16 annulus are tied to the risks associated with the residual contamination. If the material is relatively insoluble and the performance assessment (PA) assumes the material is soluble, then the risks may be overestimated. On the other hand, NRC has questions regarding waste release assumptions for the annular contamination.

Finally, DOE provided a high level overview of its HTF PA model implemented in the GoldSim®¹ software package. During the overview, DOE clarified potential location(s) of annular sources for Type I and II tanks. DOE also discussed the use of flow field data in benchmarking and in probabilistic modeling.

During discussion on GoldSim modeling, NRC inquired about source loading and waste release assumptions for annular contamination. DOE clarified potential locations of annular contamination for Type I and II tanks. NRC inquired about the inclusion of preferential pathways through the annulus. DOE models preferential pathways along the tank wall, through the center of the tank and through the basemat. However, it is not clear that a preferential pathway exists through the grouted annulus between the primary tank wall and the vault wall (i.e., not including annular contamination that may be present in the sand pad above the basemat).

FOLLOW-UP ACTIVITY:

From June 5, 2013, Public Meeting:

1. Long-Term: NRC to provide DOE with Center for Nuclear Waste Regulatory Analyses documentation of cementitious monolith work.
2. NRC and DOE to hold follow-up on HTF PA model calibration telecon for clarification prior to RAI issuance. COMPLETE
3. NRC and DOE to hold follow-up discussion on sorption coefficients – Tentative based on submittal of DOE written responses to original sorption coefficient questions provided for April 17, 2013, telecon. COMPLETE

¹ Goldsim software is used to perform Monte Carlo simulations for dynamically modeling complex systems in business, engineering, and science

4. NRC and DOE to hold follow-up telecon discussion on GoldSim uncertainty. COMPLETE
5. DOE to provide NRC feedback on methodology for NRC documentation on FTF Requests for Additional Information applicable to HTF.
6. DOE to review the NRC clarification calls summary table (NRC Clarification Questions and Summaries of DOE Responses, Enclosure 4) for factual accuracy. COMPLETE
7. NRC to consider whether one monitoring plan (to include a revision of the existing FTF plan to include HTF) or two separate plans (one each for FTF and HTF) will be developed.
8. DOE to provide NRC the Public Comments on the Draft HTF 3116 Basis Document. COMPLETE
9. DOE to compile action items along with attendance sheets from the June 5, 2013, public meeting and provide to NRC electronically. COMPLETE

From June 6, 2013, Consultation Visit:

1. DOE to provide NRC an electronic copy of presentation material [SRR-CWDA-2013-00080, Revision 1] including action items and attendance roster.
2. DOE to Provide NRC a copy of the Tank 16 annulus cleaning mock-up test report.
3. DOE to provide NRC a copy of the *Tank 12 Bulk Oxalic Acid Cleaning Operating Plan*, U-ESR-H-00103.
4. DOE to provide NRC a copy of the FORTRAN source code for the Dynamic Link Libraries supporting GoldSim modeling.
5. DOE to evaluate available documentation relative to waste tanks with groundwater in-leakage in to the tank annulus. If available DOE will provide documentation to the NRC.

NOTE: Items 1-4 complete.