

January 6, 2006

MEMORANDUM TO: Scott Flanders, Deputy Director
Environmental & Performance Assessment Directorate
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

THRU: Ryan Whited, Chief **/RA/**
Low-Level Waste Section
Environmental & Performance Assessment Directorate

FROM: Anna Bradford **/RA/**
Senior Project Manager
Low-Level Waste Section
Environmental & Performance Assessment Directorate

SUBJECT: NOVEMBER 30, 2005 MEETING SUMMARY: MEETING WITH U.S.
DEPARTMENT OF ENERGY TO DISCUSS DRAFT WASTE
DETERMINATION FOR TANKS 18 AND 19 AT THE SAVANNAH RIVER
SITE

On November 30, 2005, staff and management from the U.S. Nuclear Regulatory Commission (NRC) and the U.S. Department of Energy (DOE) met to discuss an overview of DOE's draft waste determination for Tanks 18 and 19 at the Savannah River Site. The draft waste determination was submitted to the NRC for review on September 30, 2005. The meeting summary is attached for your use.

Attachment 1: Summary of Meeting
Attachment 2: Attendee List
Attachment 3: Handout on Overview of Draft Waste Determination

cc: K. Picha/DOE

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DATE	12/29/05	1/3/05

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**SUMMARY OF NOVEMBER 30, 2005, OPEN MEETING TO DISCUSS AN OVERVIEW OF
THE DRAFT WASTE DETERMINATION FOR TANKS 18 AND 19
AT THE SAVANNAH RIVER SITE**

Introduction

On November 30, 2005, staff and management from the U.S. Nuclear Regulatory Commission (NRC) and the U.S. Department of Energy (DOE) met to discuss an overview of the draft waste determination for closure of Tanks 18 and 19 at the Savannah River Site (SRS). This meeting was open to the public and was held at NRC Headquarters.

In addition to NRC and DOE staff and contractors present at the meeting, representatives of DOE-SRS, DOE-Hanford, DOE-Headquarters, and the Center for Nuclear Waste Regulatory Analyses (CNWRA) participated via conference call. In addition, a representative of the National Academy of Sciences was present at the meeting. The list of attendees is included as Attachment 2. The handouts used during the meeting to discuss the overview of the draft waste determination are provided in Attachment 3. DOE's draft waste determination for closure of Tanks 18 and 19 is available in the Agencywide Documents Access and Management System (ADAMS) under accession number ML053110081.

Discussion

The draft waste determination for closure of Tanks 18 and 19 at SRS was submitted to the NRC for review on September 30, 2005. The purpose of the meeting was for DOE to provide an overview of its draft waste determination, as well as a large supporting document known as the Performance Objectives Demonstration Document (PODD). During the meeting, DOE provided an overview of the history of tank farm construction and operation, waste removal, waste sampling, and estimated doses to the public and to intruders for Tanks 18 and 19 (see handouts in Attachment 3 for details).

DOE indicated that factors preventing further waste removal from Tank 18 are: (1) the presence of fast-settling zeolite, (2) the hardened mound of waste at the bottom of the tank, (3) Federal Facility Agreement (FFA) closure requirements (i.e., milestones established for tank closure), and (4) lack of tank farm storage space. The factors preventing further waste removal from Tank 19 are: (1) the presence of fast settling zeolite, (2) FFA closure requirements (i.e., milestones established for tank closure), and (3) lack of tank farm storage space. DOE stated that the zeolite in the tanks is present in different layers in the saltcake (depending on when the zeolite was discharged into the tank), that some zeolite from Tank 19 is now in Tank 18, that used zeolite settles as quickly as fresh zeolite, and that the performance assessment does not take credit for the cesium continuing to remain on the zeolite.

NRC staff asked whether Tank 19 is physically disconnected from the rest of the tank farm. DOE indicated that Tank 19 is physically isolated and that the corresponding equipment is no longer operational, but that new equipment would be needed for additional waste removal from the tank regardless of whether the tank is isolated or not.

NRC staff stated that page 58 of the draft waste determination appears to indicate that DOE was still removing several thousand gallons of waste per washing of Tank 18 and asked why

DOE stopped waste removal operations. DOE indicated that the pump had to run excessively to remove the additional waste and that the performance and efficiency of the pump had decreased to the point that it may have needed to be replaced. DOE used fresh water to flush the tank instead of supernate because the salts present in the supernate would need to be washed out of the sludge before the sludge could be processed in the Defense Waste Processing Facility.

NRC staff asked whether the backfill soil around the tanks was compacted and whether it has been characterized, and noted that compaction could affect the hydraulic conductivity. DOE indicated that it had tested the backfill's compaction as part of its hydrogeological program and that DOE monitors soil settling because it could affect transfer lines in the tank farm.

During discussion of the PODD, DOE noted that the PODD contains the performance assessment for the tanks. The seepage line, which is one mile away from the tanks, was used as the point of maximum exposure because of the nature of the hydrogeology and because DOE intends to retain control of the General Separations Area of the SRS. NRC staff stated that under 10 CFR Part 61, institutional controls can only be relied on for 100 years. DOE stated that it believes this is a unique situation and that the point of maximum exposure was a location that was agreed to by the State of South Carolina. NRC staff reiterated that they would follow the Part 61 process and DOE indicated that the PODD does provide the doses that could occur if the institutional controls fail at 100 years. NRC staff also stated that it will review the information supporting the assumption that the upper aquifer is not productive, and asked whether DOE has performed tracer tests of the flow of each of the aquifers and the percentages of recharge that each aquifer receives. DOE indicated that it would need to check whether tracer tests have been performed for the F area.

DOE stated that the performance assessment assumes that all the tanks in the F tank farm fail hydraulically at 500 years with 40 cm/yr of infiltration and the hydraulic conductivity of sand, and that the modeling does not take credit for the engineered cap that will be placed on the tanks after closure. DOE also stated that it conservatively assumed that all the groundwater flows into Fourmile Branch.

DOE's intruder scenario assumes that an intruder drills through a transfer line at 100 years. The drinking water dose from the waste left in the tanks is negligible at that time because the tanks are assumed not to have failed hydraulically until 500 years. DOE stated that it is modeling a sensitivity case in which an intruder drills through a tank but that analysis is not yet complete. NRC staff asked whether DOE considered cases of little or no dispersion and DOE responded that it performed sensitivity cases in which dispersivity is reduced by half from the base case.

The NRC staff asked what the limiting factor is for meeting Class C concentration limits and DOE responded that the limiting factor is the concentration of transuranic radionuclides. NRC staff asked why a larger amount of grout is needed to meet the Class C concentration limits for Tank 18 than Tank 19. DOE responded that it is because of the concentration of transuranic radionuclides, particularly curium, and that the both tanks have to be stabilized with grout because of residual waste remaining on the walls and roofs of the tanks.

Public Comment

A representative from the NAS asked whether DOE plans to use the same “three-tier” grouting approach that was used previously on Tank 17. DOE responded that the three-tier approach will not be used for Tanks 18 and 19; instead, DOE plans to fill the tanks with reducing grout up to the springline and then pour a layer of high-strength grout up to the bottom of the tank riser ports. The NAS representative asked whether the grouting is reversible and DOE responded that such an issue would probably be addressed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) but that this type of grout is not designed to be retrieved.

Closing Remarks and Action Items

DOE stated that it would be interested in holding future meetings with the NRC to discuss technical topics related to draft waste determinations and NRC responded that it would participate in such meetings and that those types of meetings would be open to the public. The specific topics and dates of the meetings have not yet been determined.

**Attendees at NRC and DOE Meeting
to Discuss an Overview of the Draft Waste Determination for Tanks 18 and 19
at the Savannah River Site**

NAME	AFFILIATION	PHONE NUMBER
Anna Bradford	NRC/NMSS	301-415-5228
A. Christianne Ridge	NRC/NMSS	301-415-5673
Karen Pinkston	NRC/NMSS	301-415-3650
Mark Thaggard	NRC/NMSS	301-415-6971
Ryan Whited	NRC/NMSS	301-415-5135
David Esh	NRC/NMSS	301-415-6705
John Greeves	Consultant	301-412-3521
Linda Suttora	DOE	301-903-7921
R.K. Wild	NRC/IG	301-415-5943
Neil Jensen	NRC/OGC	301-415-1637
Barbara Pastina	National Academy of Sciences	202-334-2161
Shelby Perkins	DOE	202-586-8078
Martin Letourneau	DOE-HQ	301-903-3532
Thomas Frank England	WSRC	803-507-3143
Tom Robinson	WSRC	803-208-3443
Steve Thomas	WSRC	803-208-8064
Ginger Dickert	WSRC	803-208-1527
Sherri Ross	DOE-SR	803-208-6078
Randy Kaltreider	DOE-HQ	301-903-4259
Ken Picha	DOE-EM	202-586-9726
Doug Hintze	DOE-SR	803-208-6076
Mark Gilbertson	DOE-HQ	202-586-5042
Center for Nuclear Waste Regulatory Analyses (on phone)		
DOE-Headquarters (on phone)		

DOE-Savannah River Site (on phone)		
DOE-Hanford (on phone)		

Attachment 3
Handout on Overview of Draft Waste Determination
(ML053630067)