

September 18, 2012

Mr. Robert M. Shaw
Project Manager, Tank Farm Closure Project
U.S. Department of Energy, Idaho Operations Office
MS-1222
1955 Freemont Avenue
Idaho Falls, ID 83415

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION ONSITE OBSERVATION
REPORT FOR THE IDAHO NATIONAL LABORATORY IDAHO NUCLEAR
TECHNOLOGY AND ENGINEERING CENTER TANK FARM FACILITY

Dear Mr. Shaw:

The enclosed document describes the U.S. Nuclear Regulatory Commission's (NRC's) onsite observation activities on June 19, 2012, for monitoring disposal actions taken by the U.S. Department of Energy (DOE) at the Idaho National Laboratory (INL), Idaho Nuclear Technology and Engineering Center Tank Farm Facility (INTEC TFF). This onsite observation was conducted in accordance with the Ronald Reagan National Defense Authorization Act for Fiscal Year 2005 (NDAA), which requires NRC to monitor disposal actions taken by the DOE for the purpose of assessing compliance with the performance objectives set out in Subpart C of Part 61 of Title 10 of the Code of Federal Regulations.

NRC's onsite observation at INL supported assessment of compliance with the 10 CFR 61.43 performance objective. The main focus was to verify DOE's radiation protection and environmental monitoring programs at the INTEC TFF. Because environmental monitoring data also provides information to assess performance assessment models, this onsite observation also partially addresses the 10 CFR 61.41 performance objective. Additional visits will be conducted in the future to assess compliance with all of the performance objectives in 10 CFR Part 61, Subpart C.

If you have any questions or need additional information regarding this report, please call me at 301-415-7479, or call Maurice Heath, Project Manager of my staff, at 301-415-3137.

Sincerely,

/RA/

Andrew Persinko, Deputy Director
Environmental Protection and Performance
Assessment Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

Enclosure:
NRC Observation Report

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ML12240A037

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**IDAHO NATIONAL LABORATORY IDAHO NUCLEAR TECHNOLOGY AND ENGINEERING
CENTER TANK FARM FACILITY
U.S. NUCLEAR REGULATORY COMMISSION ONSITE OBSERVATION REPORT**

1.0 BACKGROUND:

The National Defense Authorization Act (NDAA) for Fiscal Year 2005 authorizes U.S. Department of Energy (DOE), in consultation with the U.S. Nuclear Regulatory Commission (NRC), to determine whether certain radioactive waste related to the reprocessing of spent nuclear fuel is not high-level waste, provided certain criteria are met. The NDAA also requires NRC to monitor DOE disposal actions to assess compliance with 10 CFR Part 61, Subpart C, performance objectives for low-level waste.

On September 7, 2005, DOE submitted a draft waste determination for residual waste incidental to reprocessing stored in the Idaho Nuclear Technology and Engineering Center Tank Farm Facility (INTEC TFF) to demonstrate compliance with the NDAA criteria including demonstration of compliance with the performance objectives in 10 CFR Part 61, Subpart C. In its consultation role, the NRC staff reviewed the draft waste determination and concluded that the NDAA criteria could be met for residual waste stored in the INTEC TFF. NRC documented the results of its review in a Technical Evaluation Report (TER) issued in October 2006 (NRC, 2006). DOE issued a final waste determination in November 2006 taking into consideration the assumptions, conclusions, and recommendations documented in NRC's TER (DOE Idaho, 2006).

To carry out its monitoring responsibilities under the NDAA, NRC developed a monitoring plan for the INTEC TFF facility in April 2007 (NRC, 2007). The NRC conducted two onsite observations in 2007 to observe tank grouting operations (7 of 11 large tanks and 4 smaller tanks) at the INTEC TFF. All open items identified in the first onsite observation conducted in April 2007 (ML071300222) were closed in the August 2007 onsite observation (ML072570173). In August 2008, NRC staff participated in a third onsite observation to observe pipe grouting operations, radiation protection controls, and the environmental sampling program (ML082050071). No findings resulted from the three onsite observations. No significant tank farm closure activities occurred in calendar year 2009; therefore, NRC staff elected to forego an onsite observation. No significant closure activities occurred at the INTEC TFF in calendar year 2010; however, given the length of time that had elapsed since the last onsite observation, the NRC staff decided to conduct an onsite observation visit in August 2010. The staff's visit did not identify any significant issues; however the staff did have two recommendations for DOE to consider when performing its annual checklist to determine if the INTEC TFF Performance Assessment should be updated. The staff documented its results in the October 2010 observation report (ML102770022). In July 2012 the NRC decided to conduct another onsite observation to obtain additional information and observe, as appropriate, disposal actions related to closure of the remaining 4 large tanks. During the visit, NRC staff obtained updates on closure activities and schedules, and collected routine information related to several monitoring factors listed in NRC's monitoring plan for the INTEC TFF (ML070650222), such as radiation protection and environmental monitoring programs. Prior to the onsite observation on

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June 18, NRC staff met with officials from the State of Idaho Department of Environmental Quality (IDEQ) to discuss the INL Oversight program and environmental monitoring at INTEC and the larger INL site.

2.0 NRC ONSITE OBSERVATION ACTIVITIES:

On June 19, 2012, NRC staff visited the INL site and listened to presentations by DOE regarding current and planned closure activities at the INTEC TFF. DOE provided information regarding delays in the schedule for closure of four large, 1000 m³ high-level waste tanks (including one spare tank) related to issues with start-up of the Integrated Waste Treatment Unit (IWTU) that will be used to treat the sodium-bearing waste remaining in the tanks. Despite uncertainty in the timing of start-up of the IWTU, DOE has taken steps to prepare for bulk waste removal, heel retrieval, and grouting of the four tanks including design modifications, refurbishment and testing of existing wash equipment; fabrication and installation of steam jets and above-ground transfer lines; activation of wash procedures; and preparation of liquid transfer sheets to support cleaning operations. DOE discussed modifications that were made to wash and grout equipment based on lessons learned from prior campaigns. DOE also discussed differences between the tanks that have been cleaned and the four remaining tanks yet to be cleaned (e.g., differences in cooling coil supports). Spare tank, WM-190, has been outfitted with a wash ball and steam jet to facilitate testing and readiness once the IWTU comes on-line. DOE also provided a tour of INTEC facilities, including a walk-down of structures and tents that support tank farm closure activities.

2.1 RADIATION PROTECTION:

2.1.1 Observation Scope:

During the onsite observation, NRC staff participated in discussions with DOE and DOE contractor staff regarding completed and planned tank farm closure activities to obtain a better understanding of the types of activities that may lead to the greatest risks to radiation workers and members of the public during tank farm closure. NRC staff also obtained information regarding radiological controls during wash and grouting operations. NRC staff will continue to monitor DOE's radiation protection program related to tank farm closure in a future onsite observation or through technical review of documentation such as radiation work permits, worker dose records, and ALARA documentation as tank farm closure activities progress.

2.1.2 Observation Results:

NRC staff identified no issues or follow-up actions related to DOE's radiation protection program.

2.1.3 Conclusions:

NRC staff continues to have reasonable assurance that the performance objective in 10 CFR 61.43 can be met.

2.2 ENVIRONMENTAL MONITORING:

2.2.1 Observation Scope:

During this onsite observation visit, NRC staff listened to presentations and participated in discussions with DOE and contractor staff regarding ongoing remedial actions and groundwater monitoring activities performed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) program at the INTEC TFF. Prior to the onsite observation, NRC staff also met with officials from the Idaho Department of Environmental Quality (IDEQ) to discuss its oversight of the site, specifically related to its independent environmental surveillance program.

NRC staff inquired about continued sampling of an INTEC TFF groundwater well north of the tank farm (ICPP-MON-A-230) that had elevated concentrations of Tc-99 over the past several years. NRC staff obtained information regarding the latest groundwater monitoring results and recently issued groundwater monitoring reports. NRC staff will document the results of its review of these documents in a separate technical review document.

NRC staff also inquired about DOE's performance assessment maintenance plan and annual check-list used to facilitate decision-making regarding the need for supplementary analyses or modifications to key closure documents. DOE provided NRC staff with a copy of the "Compliance and Monitoring Plan for Performing Grouting at the INTEC Tank Farm Facility Closure Project" (DOE Idaho, 2010). This plan contains a check-list in Appendix D that indicates that types of triggers that might warrant further evaluation. This check-list was used by DOE in 2010 and triggered supplementary analysis by DOE to evaluate the impact of more vertical (rather than lateral) flow of groundwater released from INTEC tanks to the Snake River Plain Aquifer. Based on the supplementary analysis, DOE concluded that the doses could be a factor of 2 higher than predicted by the PA (DOE Idaho, 2003). However, the doses were still significantly below the performance objectives in 10 CFR Part 61, Subpart C. NRC staff reviewed DOE's supplementary analysis and found it to be acceptable. The results of NRC staff's review of the supplementary analysis will be provided in the calendar year 2011 periodic compliance monitoring report to be issued later this year.

2.2.2 Observation Results:

NRC staff identified no issues or follow-up actions related to DOE's environmental monitoring program. NRC staff continues to coordinate with the IDEQ and to rely on its oversight of INTEC TFF activities through its independent environmental surveillance program. NRC staff finds DOE's annual check-list to be an adequate tool to ensure that new and significant information that may impact the conclusions in DOE's waste determination (DOE Idaho, 2006) or supporting PA (DOE Idaho, 2003) is evaluated to ensure that INTEC TFF disposal actions are compliant with the performance objectives in 10 CFR Part 61, Subpart C.

2.2.3 Conclusions and Follow-up Actions:

NRC continues to have reasonable assurance that the performance objectives in 10 CFR Part 61, Subpart C can be met.

3.0 PARTICIPANTS:

NRC Observation Team

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Heath, Maurice
McKenney, Christopher

Idaho Department of Environmental Quality

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Howard, Terry
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Rielly, Pat

4.0 REFERENCES:

DOE Idaho. "Basis for Section 3116 Determination for the Idaho Nuclear Technology and Engineering Center Tank Farm Facility." DOE/NE-ID-11226, Revision 0. November 2006.

DOE Idaho. "Compliance and Monitoring Plan for Performing Grouting at the INTEC Tank Farm Facility Closure Project." PLN-2309, Revision 3. October 6, 2010.

DOE Idaho. DOE/ID-10966, "Performance Assessment for the Tank Farm Facility at the Idaho National Engineering and Environmental Laboratory." Rev. 1. (Errata December 2, 2003). Idaho Falls, Idaho: DOE Idaho. 2003.

NRC. "U.S. Nuclear Regulatory Commission Plan for Monitoring Disposal Actions Taken by the U.S. Department of Energy at the Idaho National Laboratory Idaho Nuclear Technology and Engineering Center Tank Farm Facility in Accordance with the National Defense Authorization Act for Fiscal Year 2005." Washington, D.C.: NRC. 2007. ML070650222.

NRC. "U.S. Nuclear Regulatory Commission Technical Evaluation Report for the U.S. Department of Energy Idaho National Laboratory Site Draft Section 3116 Waste Determination for Idaho Nuclear Technology and Engineering Center Tank Farm Facility." Washington, DC: NRC, 2006. ML052630012.

