



Department of Energy

Washington, DC 20585

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DNF SAFETY BOARD

The Honorable Peter S. Winokur
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, DC 20004

Dear Mr. Chairman:

Thank you for your May 23 letter requesting the Department of Energy (DOE) provide a report on DOE's evaluation of the need for an additional independent assessment at the completion of startup testing of the Idaho National Laboratory's Integrated Waste Treatment Unit (IWTU) and prior to the introduction of radioactive waste feed.

The DOE Idaho Operations Office performed the IWTU Readiness Assessment in compliance with the requirements in DOE Order 425.1D, *Verification of Readiness to Start Up or Restart Nuclear Facilities*. As discussed during a briefing to you and other members of the Defense Nuclear Facilities Safety Board (Board) on June 16, DOE agrees that IWTU will benefit from an additional independent assessment at the completion of startup testing and prior to the introduction of radioactive waste feed as described in the enclosed report.

We appreciate the Board's perspective and look forward to continued positive interactions. If you have any questions, please contact me or Mr. James Hutton, Acting Deputy Assistant Secretary for Safety, Security, and Quality Programs, at (202) 586-5151.

Sincerely,

David Huizenga
Acting Assistant Secretary
for Environmental Management

Enclosure



**Report on the Evaluation of the Need for Additional
Independent Assessment of Startup Readiness for the
Integrated Waste Treatment Unit**

June 18, 2014



Approved:  6/18/14
Evaluation Leader Date

Evaluation of the Need for Additional Independent Assessment of Startup Readiness for the Integrated Waste Treatment Unit

BACKGROUND/PURPOSE/SCOPE

The U.S. Department of Energy, Idaho Operations Office (DOE-ID), Idaho Cleanup Project (ICP) has developed and implemented a disciplined startup approach to radioactive operations for the Integrated Waste Treatment Unit (IWTU). This approach is fully compliant with the requirements of DOE Order (O) 425.1D, *Verification of Readiness to Start Up or Restart Nuclear Facilities*, and DOE has regularly apprised the Defense Nuclear Facilities Safety Board (Board) and staff on progress. In a May 23, 2014 letter to the Secretary of Energy, the Board requested “a report and briefing within 30 days, on DOE’s evaluation of the need for additional independent assessment at the completion of IWTU startup testing and prior to the introduction of radioactive waste feed.” A briefing on DOE’s plan for independent oversight was presented to the Board on June 16, 2014 and this evaluation fulfills the Board-requested report.

The scope of this evaluation considers the formal startup readiness reviews conducted to date, as well as the modifications performed in the IWTU facility since the most recent readiness review. The most recent readiness reviews conducted were a Contractor Readiness Assessment (CRA), followed by a DOE Readiness Assessment (DOE RA), which concluded in March 2014. Following the March 2014 RA, the contractor performed additional facility modifications to address deficiencies identified during the conduct of non-radioactive process system testing, using Test Instruction (TI) -102, *IWTU Integrated System Test: Hot Startup-Part 2*.

This evaluation was conducted by the DOE-ID Assistant Manager for Nuclear and Safety Performance. The evaluation involved reviewing the methods and results from the previously conducted readiness reviews for IWTU, and comparing the methods and results to the expectations provided in DOE O 425.1D and DOE-STD-3006-2010, *Planning and Conducting Readiness Reviews*.

TI-102, which includes testing with steam and waste stimulant, has yet to be completed due to difficulties encountered with the process off-gas system hydrogen analyzing system and further plant and/or process modifications may be required and also will be considered in startup readiness assessment efforts.

RESULTS

This evaluation concluded verification of readiness processes used by DOE-ID and its operating contractor, CH2M-WG Idaho, LLC (CWI), were effectively employed for IWTU startup and restart operations. However, operational and facility changes that have been executed since the March 2014 DOE RA warrant the conduct of an additional, independent Integrated Operations Review prior to the introduction of radioactive waste feed into the facility.

The Operational Readiness Reviews (ORR), conducted in early calendar year 2012, and the DOE RA, conducted in early calendar year 2014, were detailed reviews characterized as follows: 1)

led by personnel with experience in conducting such reviews; 2) staffed by competent, qualified individuals; and 3) independently executed. These reviews were conducted in compliance with the requirements of DOE O 425.1D and the guidance provided in DOE-STD-3006-2010. Based on DOE O 425.1D requirements and guidance provided in DOE-STD-3006-2010 the readiness reviews (ORRs and RAs) were properly scoped.

During plant testing in June 2012, subsequent to the April ORR, the facility experienced a pressurization event resulting in facility shutdown. Causal analysis of the pressurization event identified a number of facility design changes (33 modifications) that were completed in December 2013. The resulting CRA and DOE RA for facility restart were completed in March 2014. The CRA reviewed all modification packages for the 33 facility modifications that were conducted following the June 2012 event, and conducted an in-depth review of 10 of the modifications. The CRA concluded:

As a result of the thorough review of the post-event modifications, including interviews, discussions, and document reviews conducted, the assessment team is convinced that the project has completed and fully closed all necessary facility modifications to support facility startup and operations.

During the March 2014 DOE RA, consistent with the expectations in DOE-STD-3006-2010 for Operational Readiness Reviews, the review team conducted a sampling of completed documentation pertaining to recent modifications made to the facility to validate the CRA results in this area. The DOE RA team concluded the following regarding the modifications: “. . .the facility configuration matches the approved drawings, design documents, and facility descriptions” and “. . . were designed and implemented following sound engineering discipline.”

As described in the May 23 letter from the Board, following the DOE RA in March 2014, the IWTU facility experienced operational issues in reaching and maintaining full operating temperature in the Granular Activated Carbon (GAC) beds (a portion of the process off-gas system). Additionally, adequate sample flow could not be established for the Hydrogen Analyzer system. These and other operational issues identified during testing after the DOE RA resulted in operational and facility changes. The contractor has formal procedures in place for evaluating the significance of these changes with respect to restart readiness (in accordance with DOE O 425.1D requirements). In addition, the contractor conducted an evaluation of the modifications, individually and collectively, and determined no additional readiness review was required. DOE-ID reviewed the contractor's documentation for this determination and agreed with the contractor's conclusion. Individually and collectively, the modifications were not considered substantial consistent with DOE O 425.1D language.

Although no readiness review is required based on the nature of the modifications, DOE-ID has chartered an independent review team to conduct an independent integrated system operations review, focused on the operational and facility changes conducted in April/May 2014. This review will take place during the conduct of IWTU startup testing (i.e. during steam and simulant operations under TI-102) and prior to the introduction of radioactive waste feed. The team consists of a representative from the DOE Office of Environmental Management (EM) Headquarters and two independent evaluators: Facility Representative from the Oak Ridge

Office of Environmental Management, and a Radiation Protection Subject Matter Expert from the DOE Savannah River Operations Office. The team's charter includes:

- Independently conduct a technical evaluation of safety system performance under normal operating parameters (including operation of the GAC beds at normal operating temperatures);
- Independently review facility modifications performed since the March 2014 DOE RA to ensure proper implementation (procedures, training, safety basis);
- Independently verify closure of the March 2014 DOE RA radiation protection Pre-Start Findings; and
- Provide federal oversight of integrated system operation.

The DOE-ID startup authorization authority, the Deputy Manager, ID ICP, will use a number of factors and inputs in exercising IWTU restart authorization authority to proceed with the introduction of radioactive waste feed into the IWTU facility. These factors will include:

- Satisfactory independent closure verification of the March 2014 DOE RA radiation control Pre-Start Findings;
- Results from the June 2014 Integrated Operations Review;
- Successful completion of non-radioactive system testing in accordance with TI-102; and
- Post TI-102 outage verification of facility modification performance.

Any additional facility or operational changes identified and implemented following the Integrated Operations Review will be evaluated for the need for a readiness review, consistent with established procedures and as required by DOE O 425.1D. This includes any changes determined necessary during the conduct (and completion) of TI-102, and any changes determined necessary during and following completion of the confirmatory outage planned after TI-102 is complete.