



Department of Energy

Washington, DC 20585

April 28, 2023

The Honorable Joyce L. Connery
Chair
Defense Nuclear Facilities Safety Board
625 Indiana Avenue NW, Suite 700
Washington, DC 20004

Dear Chair Connery:

This letter is in response to the Defense Nuclear Facilities Safety Board's (Board) February 28, 2023, letter regarding Direct-Feed Low-Activity Waste integration of safety bases. I am responding on behalf of Secretary Granholm.

Pursuant to 42 U.S.C. § 2286b(d), the Board requested a written response within 60 days outlining how the Department of Energy (DOE) plans to ensure the effective implementation of the cover block removal specific administrative control (SAC) at the Low-Activity Waste (LAW) facility. This letter outlines how DOE will ensure the effective implementation of the cover block removal SAC and more broadly, the effective implementation of waste leak hazard controls at the Hanford Tank Farms. The enclosure to this letter provides additional detail on these planned improvements, and addresses other observations in the Staff Report that was included in the Board's letter.

The Department is committed to establishing effective integration between Hanford contractors to ensure success of the overall Hanford mission. DOE has identified planned improvements to strengthen coordination between the Tank Operations contractor, Washington River Protection Solutions, LLC (WRPS), and the Waste Treatment and Immobilization Plant contractor, Bechtel National, Inc. (BNI), to effectively control waste leak hazards at the Hanford Tank Farms. BNI is revising Interface Control Documents and the Documented Safety Analysis for the LAW facility and Effluent Management Facility (EMF) to better define roles and responsibilities for implementation of controls. Additionally, WRPS and BNI are revising the Technical Safety Requirements for Tank Farms and LAW/EMF, respectively, to include interface control requirements and responsibilities.

Following implementation of these planned improvements, DOE will evaluate their effectiveness and will consider broader implementation between the other interfacing facilities at the Hanford Site.

We appreciate the Board's perspectives and look forward to continuing discussions with you and your staff. If you have any questions, please contact me or Mr. Brian T. Vance, Manager, Hanford Site, at (509) 376-7395.

Sincerely,

A handwritten signature in blue ink, appearing to read "William I. White". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

William I. White
Senior Advisor for Environmental Management

Enclosure

1. Waste Leak Hazards

Section 1.a below describes how waste leak hazard controls are currently implemented at the Hanford Tank Farms, and Section 1.b describes planned safety improvements.

a. Current Controls

Washington River Protection Solutions, LLC (WRPS) currently controls Tank Farms waste leak hazards in accordance with HNF-SD-WM-TSR-006, *Tank Farms Technical Safety Requirements (TSR)*, and describes implementation of these controls in RPP-13033, *Tank Farms Documented Safety Analysis (DSA)*.

An integrated Bechtel National, Inc. (BNI)/WRPS team conducted process hazards analysis meetings on January 14, 2020, through January 16, 2020, to evaluate an inadvertent transfer of hazardous material from the Waste Treatment and Immobilization Plant (WTP) to Tank Farms with the cover blocks removed from waste transfer-associated structures 241-AP-06A and 241-AP-02D. The results of these meetings are documented in RPP-RPT-61706, *Process Hazard Analysis for Direct-Feed Low-Activity Waste (DFLAW) Tank-Side Cesium Removal Upgrades/Waste Feed Delivery Upgrades Project (TIP190)*. In the meetings, the team deliberately and systematically identified the hazard, evaluated the hazard, and developed controls to prevent the hazard scenario.

HNF-SD-WM-TSR-006 includes specific administrative control (SAC) 5.8.10, *AP-02D and AP-06A Cover Block Removal*. This SAC protects Tank Farms facility workers from exposure to chemical burn hazards from waste leaks due to a misroute from the LAW facility during maintenance work activities that require the cover blocks to be removed for access into the 241-AP-02D and 241-AP-06A waste transfer-associated structures. The SAC requires that either the motive force to waste transfer pumps in the LAW facility is removed and secured or that the transfer lines are physically disconnected from the waste transfer pumps by installing and securing blind flanges downstream of the pressurized waste, and the SAC requires independent verification that the preceding actions are complete.

RPP-13033 describes implementation of SAC 5.8.10. The SAC requirements (LAW facility transfer pumps to be secured or physically disconnected) are implemented in a work order developed by WRPS in accordance with TFC-OPS-MAINT-C-01, *Tank Operations Contractors (TOC) Work Control*. WRPS workers install locks on the LAW facility waste transfer pumps or the blind flanges per the Department of Energy (DOE)-0336, *Hanford Site Lockout/Tagout Procedure*. WRPS performs independent verification that the motive force to waste transfer pumps in the LAW facility is removed and secured, or that the waste transfer lines are physically disconnected from the pumps in accordance with TFC-OPS-OPER-C-34, *Independent Verification*.

BNI currently ensures controls remain implemented for Tank Farms waste leak hazards in Interface Control Documents (ICD) 24590-WTP-ICD-MG-01-030, *ICD 30 – Interface Control Document for DFLAW Feed*, and 24590-WTP-ICD-MG-01-031, *ICD 31 –*

Interface Control Document for DFLAW Effluent Returns to Double-Shell Tanks, and describes implementation of these controls in 24590-WTP-ICD-MG-01-030, 24590-WTP-ICD-MG-01-031, and 24590-LAW-DSA-NS-18-0001, *DSA for the LAW and Effluent Management Facilities (EMF)*. Both ICDs are signed by BNI and WRPS, which signifies concurrence between contractors on the ICDs' contents. 24590-WTP-ICD-MG-01-030, Section 3.3.2.6, and 24590-WTP-ICD-MG-01-031, Section 3.3.2.4, require WRPS to notify BNI when cover blocks are removed from 241-AP-06A and 241-AP-02D waste transfer-associated structures, respectively. Both ICDs also describe Tank Farms SAC 5.8.10 and identify the WTP pumps that are controlled during maintenance work activities in the 241-AP-06A and 241-AP-02D waste transfer-associated structures to ensure effective implementation of the SAC.

b. Planned Safety Improvements

BNI will revise 24590-WTP-ICD-MG-01-030, 24590-WTP-ICD-MG-01-031, and the LAW DSA (24590-LAW-DSA-NS-18-0001), Section 5.7.2, *Tank Farms' TSRs that Affect Transfers to LAW*. The revision will include the component identification numbers of the affected LAW facility waste transfer pumps and blind flanges and will also define the roles and responsibilities for BNI-installed locks on the pumps or the blind flanges and subsequent verification of these actions. These BNI-installed locks are in addition to those installed and independently verified by WRPS as part of the current Tank Farms SAC 5.8.10. Additionally, WRPS and BNI will revise the Administrative Controls section of Tank Farms TSRs (HNF-SD-WM-TSR-006) and LAW/EMF TSRs (24590-LAW-TSR-NS-18-0001), respectively, to include interface control requirements and responsibilities from Chapter 5 of their respective DSAs. WRPS and BNI will track these planned improvements in their issues management system under condition reports WRPS-CR-2023-0932 and REC 2023-00209, respectively.

Following implementation of these planned improvements, DOE will evaluate their effectiveness and will consider broader implementation between the other interfacing facilities at the Hanford Site.

2. Tank Side Cesium Removal (TSCR) System Access Restriction Directive Action SAC

The Department acknowledges that directive action SAC 5.8.13, *TSCR PROCESS AREA Access Restriction*, in the Tank Farms TSRs (HNF-SD-WM-TSR-006) is inconsistent with the description of directive action SACs provided in DOE-STD-1186-2016, *Specific Administrative Controls*. WRPS is currently developing a safety basis amendment that modifies controls to protect the facility worker from spray leak and flammable gas hazards in the TSCR process area with the following changes to the HNF-SD-WM-TSR-006:

- Section 1.6.2, *Operational MODES*, will include a new "LIMITED ENTRY MODE," which allows entry into the TSCR process area during off-normal conditions for limited activities to restore system functionality in support of entering "MAINTENANCE MODE."

- SAC 5.8.13 will be revised to identify the conditions that shall be met prior to entering “LIMITED ENTRY MODE,” and conditions that shall be met while in this mode. The provision to use a recovery plan for entry into the TSCR process area will be deleted.

As compared to “MAINTENANCE MODE,” the “LIMITED ENTRY MODE” has a more restricted set of activities. Specifically, “LIMITED ENTRY MODE” limits waste process piping breaches to only those activities necessary to repair or replace equipment or piping to restore the TSCR process system confinement boundary, and this mode prohibits work on loaded or spent ion-exchange columns. Workers are protected from spray leak hazards in “LIMITED ENTRY MODE” by depressurizing the TSCR process vessels and piping and placing the TSCR air compressor under administrative lock prior to staffed entry. In “LIMITED ENTRY MODE,” workers are protected from flammable gas hazards by applying ignition controls or sweep air controls to manned work activities, which are limited to restoration of the TSCR process system confinement boundary. WRPS is preparing the “LIMITED ENTRY MODE” safety basis amendment with a forecast approval date in late May.

3. Safety Classification for Waste Characterization

The Department acknowledges that administrative control (AC) key element 5.9.4, *Waste Characteristics Controls*, in the Tank Farms TSRs (HNF-SD-WM-TSR-006) is inconsistent with the description of key elements provided in DOE-STD-1186-2016. The Board noted that WRPS is converting this key element to a SAC in a safety basis amendment planned for January 31, 2024 – WRPS is still on track to meet this date and is tracking this action in their issues management system under condition report WRPS-CR-2022-0501.

Because AC 5.9.4 is largely implemented by the Waste Compatibility Assessment (WCA) program, conversion of this key element into a SAC will involve revisions to the Tank Farms DSA, TSRs, and supporting documentation without significant changes to the underlying WCA program. WRPS is currently evaluating a hardware modification for safety significant level monitoring instrumentation for double-shell tank 241-AP-107 to support the cesium loading control for TSCR. The key element to SAC conversion date will be challenged if WRPS determines that it is infeasible to upgrade the existing level monitoring system to safety significant and instead has to design, procure, and install a new safety significant system.