

Peter S. Winokur, Chairman
Jessie H. Roberson, Vice Chairman
Sean Sullivan

**DEFENSE NUCLEAR FACILITIES
SAFETY BOARD**

Washington, DC 20004-2901



December 5, 2014

Mr. Kevin W. Smith
Manager, Office of River Protection
U.S. Department of Energy
P.O. Box 450, Mail Stop H6-60
Richland, Washington 99352

Dear Mr. Smith:

On September 10, 2014, the Department of Energy (DOE) provided a partial deliverable for Action 1-2 of the Implementation Plan for Recommendation 2012-2, *Hanford Tank Farms Flammable Gas Safety Strategy*. The received report, RPP-RPT-57356, *Streamlined Approach for Upgrading DST Primary Tank Ventilation*, is inconsistent with DOE requirements. Further, the report is inconsistent with the Recommendation which advised the Secretary of Energy to provide safety-significant active ventilation of the double-shell tanks.

A streamlined approach using portable equipment may temporarily improve the safety posture of the double-shell tank primary ventilation systems. However, the approach relies on non-safety equipment and administrative controls to perform the required safety function. The Defense Nuclear Facilities Safety Board (Board) advises DOE to consider the concerns listed in the enclosure during its evaluation of the report.

Pursuant to 42 U.S.C. § 2286b(d), within 15 days of DOE completing its evaluation, the Board requests an updated report and briefing on the safety strategy for upgrading the double-shell tank ventilation systems that is consistent with the Board's Recommendation and the Implementation Plan.

Sincerely,

Peter S. Winokur, Ph.D.
Chairman

Enclosure

c: Mr. Mark Whitney
Mr. Ernest J. Moniz
Mr. Joe Olencz

Enclosure

The Defense Nuclear Facilities Safety Board's (Board) concerns with the approach proposed in RPP-RPT-57356, *Streamlined Approach for Upgrading DST Primary Tank Ventilation*, as received by the Board on September 11, 2014, are summarized below:

- 1) The report proposes an approach that relies on non-safety equipment to perform the safety-significant function of maintaining the concentration of flammable gases below the lower flammability limit (LFL) in the double-shell tank (DST) headspace. This is not consistent with the requirements in Department of Energy (DOE) Standard 3009, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*, and does not meet the intent of the Board's Recommendation to reduce the risk posed by flammable gas events at the Hanford Tank Farms.
- 2) The proposed approach would allow flammable gas concentrations to reach at least 50 percent of the LFL in certain scenarios. This is contrary to the requirements of NFPA 69: *Standard on Explosion Prevention Systems*, and is inconsistent with the Board's Recommendation because it does not reduce the risk associated with the flammable gas hazard.
- 3) After loss of the primary ventilation system for a DST, the proposed approach requires monitoring tank headspace LFL with non-safety equipment in order to make decisions about connecting and operating a portable ventilation system. A safety strategy that relies on non-safety monitoring equipment instead of requirements for safety functions is not consistent with the Board's Recommendation.
- 4) The report does not discuss how the proposed approach would be implemented and the safety function accomplished following a seismic event that causes a spontaneous gas release event. Therefore, it is unclear how the proposed approach would meet the requirements in DOE Order 420.1B, *Facility Safety*, for natural phenomena hazard mitigation and post-natural phenomena procedures.