

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 7, 2012

TO: T. J. Dwyer, Technical Director
FROM: D. Gutowski and R. Quirk, Hanford Site Representatives
SUBJECT: Hanford Activity Report for the Week Ending December 7, 2012

Board Staff members P. Meyer, A. Poloski, and F. Sutherland were on-site to discuss the waste feed delivery and remote sampling systems and tank waste group characterization.

Tank Farms. The contractor declared a potential inadequacy in the safety analysis after they postulated a new mechanism for the spontaneous release of retained flammable gas from deep sludge layers in double-shell tanks (DSTs). Existing controls to prevent buoyant displacement of retained gas may not be adequate to address this mechanism. They identified this while investigating questions from the Board's staff concerning the analysis of buoyant displacement gas release events for tanks with deep sludge layers (see Activity Report 10/26/2012). Waste retrieval from C-Farm single-shell tanks (SSTs) is on hold until contractor engineers evaluate a safe sludge depth. Based on historical data and new calculations, for near term purposes, they believe that sludge depths below 170 inches will be safe. In the long term, the contractor plans to reevaluate gas retention and release mechanisms in more detail. If the maximum depth of sludge layers becomes constrained further, the contractor may lose the capability to add more sludge to DSTs and challenge the capability to remove waste from SSTs and leaking DSTs.

The contractor's Plant Review Committee (PRC) approved a proposed change to the safety basis that implements recent direction from the Office of River Protection (ORP) to continue sampling of DST headspaces including when ventilation exhaust fans are operating. This marks a departure from last year when ORP approved a change to the safety basis which required monitoring of flammable gas levels only when the DST ventilation systems were not operating (see Activity Report 12/9/2011). However, after ORP approved last year's sampling change, the contractor determined that significant flammable gas levels existed in the DST headspace even when the exhaust fans were operating (see Activity Report 1/6/2012). The new change approved by the PRC this week should identify any significant accumulation of flammable gas.

100K Area. The contractor concluded that defense-in-depth instruments required by the safety basis for the 100K West Basin were overdue for calibration and that an engineer had authorized changing the calibration periodicities without following procedures. These instruments monitor radiation levels in the sand filters and are relied on to ensure significant levels of flammable gas do not accumulate in the filter enclosures. This is another in a series of problems with activities in the 100K Area this year (see Activity Reports 9/28, 7/13, 5/18, 5/4, 4/13, 3/23, 3/2/2012).

Plutonium Finishing Plant. This week, the contractor successfully removed the top and bottom halves of glovebox HA-23S from the facility. In October, they disconnected HA-23S from its support systems but then determined the two sections were too large to remove from the facility without also removing interfering equipment. The site rep had questioned why these issues were not addressed before disconnecting the glovebox from the ventilation exhaust system. The contractor has made changes to improve the integration between the work groups that disconnect the equipment and the group that removes the material from the PFP facilities.