

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 3, 2003

TO: K. Fortenberry, Technical Director
FROM: D. Grover and M. Sautman, Hanford Site Representatives
SUBJ: Activity Report for the Week Ending January 3, 2003

Tank Farms: Recent caustic demand tests using tank AN-107 core segments taken in October indicate that much less caustic might be needed compared with that originally estimated using reconstituted archived samples. If confirmed, the second phase caustic addition may be able to be performed without encountering the precipitation and tank space limitation issues that were driving CH2M Hill Hanford Group (CHG) to look at more complicated alternatives.

CHG concluded that the hose-in-hose transfer line (HIHTL) leak was caused by an insufficient torque on the band that holds the hose on the barbed stem of the fitting in conjunction with improper test specifications for the assembly. This allowed waste to leak between the fitting stem and the inside of the hose. This type of failure can occur with banded fittings due to non-uniform clamping pressure around the hose circumference, especially at elevated temperatures which causes the performance of the connection to deteriorate. Evidently, the fabricator had originally recommended using a proprietary swaged fitting to avoid this problem, but CHG decided to use a banded fitting because it was available off-the-shelf. Unlike the original hypothesis, the failure did not occur at the flanged joint and could occur with any HIHTL with banded fittings. However, CHG believes that the current temperature restrictions are sufficient to allow existing HIHTL's to finish saltwell pumping activities that are already in progress. All future HIHTL's will have a new fitting design and be tested to the revised test specifications.

CHG discovered that a pipe spool had been installed that had the primary pipe supports and guides in the wrong orientation. The vendor had manufactured a mirror image of the required elbow which was not detected during any of the subsequent inspections. As a result, when a subcontractor flipped the elbow to fit the desired layout, the supports and guides were on top of the primary pipe rather than below it. A subsequent investigation identified 3 additional straight pipe spools that had been rotated 45 - 90°. The subcontractor had not been verifying that the markings on the exterior of the secondary pipe were in the proper orientation. (I-C, III-A)

Plutonium Finishing Plant (PFP): The Material Identification Surveillance (MIS) Working Group formally reviewed and approved the use of thermogravimetric analysis-mass spectrometry for the moisture measurement and carbon analysis of thermally stabilized polycubes. This resolves a concern the staff had raised.

In light of the inadvertent furnace actuation and shutdown that occurred due to software errors (see 12/13/02 report), PFP will be using a simulator to test the furnace upgrade program prior to running it on the stabilization equipment. (III-A)

cc: Board Members