

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 1, 2000

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
FROM: C. H. Keilers / R. T. Davis
SUBJECT: SRS Report for Week Ending December 1, 2000

Board Visit: Board members Conway, Eggenberger, and Mansfield, along with staff members Fortenberry, Tontodonato, Merritt, and Ogg and general counsel Azzaro, were on-site this week reviewing material disposition and stabilization (Recommendation 94-1), as well as high level waste and spent nuclear fuel activities. The review included tours of K-Area Material Storage and other 105-K areas, the Tritium Extraction Facility excavation, and tritium system fabrication. On Thursday evening, the Board conducted a public meeting to solicit input from the community with regard to canyon utilization, uranium and plutonium stabilization and storage, and high level waste processing. The public meeting was attended by roughly eighty to a hundred people.

Defense Waste Processing Facility (DWPF): On Thursday, WSRC poured its 1,000th canister of sludge-only glass. DWPF began radioactive operations in March 1996 and is expected to pour over 6,000 canisters by about 2025. DWPF will continue sludge-only operations until a salt processing capability is available, expected in 2010.

H-Canyon: This week, WSRC concluded the readiness assessment (RA) field work for refreshing the HEU solutions in the outside single-shell tanks. Next week, WSRC starts the RA for dissolving Sterling Forest Oxide spent nuclear fuel in the 6.1D dissolver, which has not operated in several years.

The refreshing operation involves bringing the solution back into the canyon, washing out the solvent residual (i.e., the TBP - Tributyl Phosphate), concentrating the uranium in solution, and finally transferring the solution to the large outside double-shell tank (the EUS tank). The refreshing operation results in net risk reduction, since it addresses criticality scenarios such as uranium extraction or precipitation by the residual solvent. It also addresses accident scenarios such as solvent fires and single-shell tank leaks (e.g., following an earthquake). The major pre-start finding appears to be the need to complete scheduled system leak testing before transferring solutions. The leak tests are done with clean process water and at normal operating pressure.

Last Friday, a leak was discovered in a recirculating line for one of the outside tanks (E3-2). During the night shift, operators noticed an unexpected decrease in tank level and then inspected the area and reported a continuous stream of solution at a flange. About 540 gal of 1.3 g/L uranium solution was released to the sump and containment basin before the leak was stopped. Appropriate actions were taken to avoid concentrating uranium and to recover solution.

Further investigation by WSRC determined that the leak is not at a flange but from a foot-long piping spool piece that appears to be rusted carbon steel. Design records indicate that the spool piece should be stainless steel, since it sees dilute nitric acid service. This piping run was installed about 6 years ago as part of the Uranium Solidification Facility (USF), which was never completed. WSRC believes that possibility of improper piping material is limited to USF-associated systems that are not needed to begin the refreshing operation. WSRC is preparing a plan to inspect these systems as a post-start activity. Most of the piping is insulated, which complicates visual inspection.