

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 1, 2002

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
FROM: R. T. Davis/ T. D. Burns
SUBJECT: SRS Report for Week Ending February 1, 2002

DWPF Pour Spout Insert: Shortly after start-up of the DWPF facility, glass pouring problems were encountered due to erosion of the pour spout's upper knife edge. Implementation of a robust-alloy insert for the pour spout that seats against the upper knife edge resolved the glass pouring problems and significantly reduced, but did not preclude, pour spout erosion. The pour spout inserts have a limited lifetime and need to be replaced periodically.

During the last six years, gradual erosion of the upper knife edge has increased the difficulty of maintaining a good seat with the inserts. This has led to an unacceptable frequency of insert failures. After failure of an insert this week, it has become clear that a new insert design will be required. WSRC is currently pursuing a redesign of the pour spout inserts. Part of this redesign effort is focusing on using the lower knife edge in lieu of the upper knife edge as the seating surface. Thus far there has been little success in obtaining accurate topographical images of either knife edge necessary to ensure a new design will seat effectively. Development of alternative camera imaging techniques to map the knife edges is on-going.

Plutonium Stabilization and Packaging: The FB-Line Stabilization and Packaging project will achieve packaging for SRS plutonium metals and oxides in accordance with DOE-STD-3013, which is identified as a commitment for Recommendation 94-1 and 2000-1. In December, DOE-SR requested that WSRC evaluate the proposed Tungsten Inert Gas (TIG) weld system in light of the weld porosity problems observed with the Hanford TIG weld system (site rep weekly 12/14/01). This week, WSRC recommended the use of the TIG system with 100% digital radiography supplemented by standard radiography. This recommendation was based on an evaluation of project risks, cost and schedule. DOE-SR is evaluating this recommendation. Assuming DOE-SR agrees with this recommendation, WSRC should release the weld system contract within the next few weeks.

WSRC is also evaluating acceleration options that would achieve packaging of all SRS plutonium material by the end of 2004. Results from this evaluation should be available within the next few weeks. In October, DOE-SR requested WSRC to evaluate sending plutonium solutions to HLW for disposition. Initial feedback indicates that WSRC believes that a significant quantity of the H-Canyon plutonium solutions could be sent directly to the DWPF feed tank for sludge batch 3 (i.e., similar to plans for the americium-curium solutions). This could significantly reduce HB-Line Phase II oxide production and, therefore, the amount of oxide required to be packaged in accordance with 3013. The HLW option would also provide a disposition path for some of the plutonium that is not suitable for the mixed-oxide fuel fabrication facility.