

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 5, 2004

**MEMORANDUM FOR:** J. Kent Fortenberry, Technical Director  
J. J. McConnell, Deputy Technical Director  
**FROM:** R. T. Davis/ T. D. Burns  
**SUBJECT:** SRS Report for Week Ending March 5, 2004

Staff members John Contardi and Bob Rosen were on-site this week reviewing the storage and disposition plans for aluminum clad spent nuclear fuel stored at L-Basin. In addition, staff members Roger Zavadoski and Jeff Zelinski were on-site reviewing the natural circulation flow calculations for the 2<sup>nd</sup> Glass Waste Storage Building.

**Spent Nuclear Fuel:** In the early 1990's the chemistry of L-Basin was determined to be inadequate. An upgrade project was implemented in 1994 which included improved level detection, new fuel storage racks, and new zeolite and deionizer systems. Since implementation of these improvements, the basin water chemistry and radioactivity levels have been maintained at acceptable levels. Provided the basin chemistry is maintained and adequate fuel surveillance is implemented, aluminum clad spent fuel can be safely stored at SRS for several years.

For longer-term storage until a disposition strategy can be implemented, the site is evaluating dry storage options. One option that is being pursued is the use of the L-Reactor process room (i.e., similar to the strategy used for plutonium storage at K-Reactor). Dry storage would allow the basin to be de-inventoried, provide longer-term storage capabilities and could expedite shipments to a national repository if co-disposal is selected.

**HB-Line:** As a part of the SRS Recommendation 94-1/2000-1 program, WSRC is pursuing disposition of neptunium solutions stored in H-Canyon. Approximately 50 kgs of neptunium solution that was never processed through 2<sup>nd</sup> product cycle (i.e., solution that has not been purified) will be transferred to High Level Waste (sludge batches 3 and 4) for feed to DWPF. The remaining 320 kgs of neptunium will be processed through HB-Line phase II to produce high quality oxide for shipment to Oak Ridge. An additional ion exchange column operation (partition wash) will be performed to reduce plutonium contamination. WSRC is in the process of operator training and cold runs to support startup in August 2004. Cold runs have been on hold this week because of a clogged drain header associated with the cold chemical feed area. This issue should be resolved over the weekend.

In phase I, the fourth shipment of INEEL denitrator product has been received. Once the drain header issue is resolved, WSRC will continue dissolution of this material. WSRC expects to complete this campaign late this year. Currently, no other material is scheduled to be processed in phase I. DOE-SR is required to tell WSRC if additional materials will be processed in HB-Line phase I by the end of March. Depending on the material, six months or longer is required to develop the safety basis and train operators to support a new campaign. Appropriate DOE direction is required to ensure that HB-Line phase I is fully utilized to help stabilize and disposition excess nuclear materials.