

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 9, 2001

**MEMORANDUM FOR:** J. Kent Fortenberry, Technical Director  
**FROM:** C. H. Keilers / R. T. Davis  
**SUBJECT:** SRS Report for Week Ending March 9, 2001

**HB-Line:** DOE has a Recommendation 94-1 commitment to start up HB-Line Phase II in December 2001 and begin converting 34,000 L of H-Canyon plutonium solutions to oxide. System modifications, safety analyses, and authorization basis changes are all being pursued in parallel. A new distributed control system (DCS) has been installed and tested. Cold runs begin next month.

WSRC believes authorization basis changes, expected to be approved this month, and operator training are critical path; however, major modifications remain to be done. In April, WSRC plans to upgrade the colorimeters, Nuclear Instrument Monitors (NIMs), and Old HB-Line ventilation monitoring, as well as install resin column backup screens, and several improved cold chemical loading stations. In May and June, upgrades planned include calorimeters, flow control valves, resin column rupture disks, transmitting rotameters (to ensure vessel head space purge), and cold feed refractometers (to prevent high acidity in the resin columns). In June, WSRC hopes to have operators trained and certified. By August, WSRC intends to replace four new jacketed transfer lines between H-Canyon and HB-Line. The WSRC and DOE Operational Readiness Reviews would begin in August and October, respectively. WSRC has targeted November 30<sup>th</sup> for startup.

**Canyon Emergency Power:** This week, in two separate events, both canyons lost site power to their emergency buses that drive safety class ventilation fans. In both cases, a diesel generator started and supplied power to maintain canyon ventilation. F-Canyon had a line failure due to wind-induced fatigue and dropped to a two fan configuration. One of the exhaust fans is out of service for upgrades. Operators took appropriate actions and returned the facility to the normal three fan configuration. The ventilation upgrade project underway will replace this part of the distribution system.

The H-Canyon loss of power was due to a switch failure that also caused a line transient, shutting down the plant and instrument air compressors. These are on a non-safety bus. During a loss of power, a diesel generator system is designed to automatically start and maintain power for these compressors, but it appears that a design deficiency allows the compressors to trip and not restart automatically during certain transients. This occurred during the transient this week. Facility operators responded in accordance with the alarm response procedures to provide other air sources and to reset the compressors. The design deficiency was identified for both canyons in 1998 but WSRC appears to have concluded that operator response is sufficient to deal with this issue. Plant and instrument air systems are important to facility operations for indication of many process parameters (e.g., tank levels and specific gravity) and to provide purge supply. Given these roles, the site representatives believe WSRC should reconsider accepting this design deficiency.

**Tritium Extraction Facility (TEF):** The 100 percent design review for the balance-of-plant is scheduled to start March 19<sup>th</sup>, and the detailed design is on track to be completed by May 31<sup>st</sup>. The reinforcing steel and formwork for the Remote Handling Building basemat are being installed now. Concrete placement is expected to start in early April. In January, a furnace hot zone failed during factory acceptance testing. The furnace design is being revised now to increase the hot zone robustness. Replacement equipment for the Proof-of-Principle furnace is expected by May to support deuterium demonstration runs before October.