

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 7, 2003

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 7, 2003

H-Canyon: On Thursday, a safety class steam isolation valve failed open (i.e., a non-safe failure) during startup of the 7.6E low activity waste evaporator. This valve is part of the safety class temperature interlock system that prevents evaporator temperature from exceeding 130 degrees Celsius. Operators took action to manually close a steam isolation valve. The maximum evaporator temperature was 112 degrees Celsius.

The H-Canyon safety basis identifies several controls to prevent a red-oil runaway reaction in canyon evaporators. The primary control is the safety class temperature interlock system. A second control is the safety significant interlock to limit steam coil pressure. However, both of these interlocks use the same valve to isolate steam to the evaporator. In addition, the same valve is also used to control coil pressure for the evaporator. Therefore, failure (in the open direction) of this valve could initiate the accident scenario and preclude safety interlock operation. The site representatives have questioned whether this arrangement is appropriate. Although the current safety basis identifies this as a safety class scenario, current operations with less than 8.5% tributylphosphate would not require safety class controls.

DWPF Outage: WSRC has determined that repairs to the failed Slurry Mix Evaporator (SME) can be demonstrated as equivalent with the applicable national consensus code criteria for this Safety Class piece of equipment (site rep weekly 2/14/03). The repair work is complete and the SME vessel has been re-installed into the Chemical Process Cell. Process equipment tie-ins to the SME are on-going. Further work to prepare a replacement vessel has been terminated.

The Distributed Control System (DCS) hardware installation is complete. Testing is nearing completion and most of the control systems have been turned over to operations. Minor problems with the DCS equipment status display has delayed commencement of melter heat-up. Originally scheduled for Thursday, melter heat-up is now expected over the weekend.

The WSRC Readiness Assessment (RA) began on Thursday and is scheduled to complete late next week. An independent DOE RA will not be performed. Restart of hot operations, as defined by initiation of radioactive feed to the melter, is currently expected by the end of this month.

Low-Curie Salt: The failed salt-well transfer pump has been removed from Tank 41 and a new pump has been fabricated and is ready for deployment. Partial collapse of the salt-well walls contributed to pump failure and a new permeable well casing was fabricated prevent future wall collapse.

During installation of the well casing, salt interference was encountered and a water lance was deployed to clear out the well. Subsequently, the water lance was operated at a pressure beyond its design rating and failed within the tank (lance rated for 3000 psi, pressurized to 9000 psi). It does not appear that WSRC appropriately assessed the potential hazards associated with use of the water lance. DOE-SR is investigating this occurrence to understand why the processes in place to ensure the safety of non-routine activities were not properly exercised.