

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 10, 2000

**MEMORANDUM FOR:** J. Kent Fortenberry, Technical Director  
**FROM:** C. H. Keilers / R. T. Davis  
**SUBJECT:** SRS Report for Week Ending November 10, 2000

**Recommendation 94-1:** Within weeks, WSRC intends to begin repackaging 85 Mk-42 compacts in FB-Line and by the end of February to dissolve this material in 2 charges in F-Canyon. In mid-October, WSRC considered direct discard of nearly half this material to WIPP as TRU waste; however, this is not being pursued because of the higher plutonium content of the material and because F-Canyon provides a straight-forward disposition pathway that is available now. Mk-42 disposition will be a milestone from several perspectives. In 1981, one sealed can of this material ruptured and grossly contaminated an FB-Line vault. The can over-pressurized due to radiolytic decomposition of an organic die-lubricant mixed with the plutonium. To prevent recurrence, WSRC repackaged this material into slip-lid cans in vent-filtered polyethylene bags, which were then placed in vent-filtered outer metal containers. WSRC considers this to be one of the safer SRS plutonium storage configurations. When WSRC finally dissolves the compacts, it will mark the end of both this FB-Line legacy material, as well as the EBR-II/Mark-42 dissolution campaign started this past summer.

To achieve this long-term risk reduction requires accepting a potential short-term risk increase. Specifically, the Mk-42 compacts need to be repackaged in FB-Line into crimp-sealed metal containers since the plastic bags and filters are not compatible with the canyon dissolution process. WSRC believes that little die-lubricant remains that can radiolytically decompose. Experimentally, pressure decreases have been seen due to the contents and the released hydrogen scavenging oxygen from the air. A recent SRTC evaluation concluded that the gas generation rate should permit safely storing this material in crimp-sealed cans for up to one year. DOE has approved authorization basis changes for the FB-Line repackaging and is reviewing proposed changes for the canyon dissolution.

**Tank 49 Material Disposition:** WSRC continues activities associated with disposition of the ITP wash water contained in tank 49 (site rep weekly 10/20/00). The tank level has been increased to approximately 36 inches in an attempt to dissolve sodium tetraphenylborate (NaTPB) solids in the tank. Video and sample analysis indicate that these solids are being dissolved. With regard to tank heat-up and catalyst addition, it now appears that WSRC will develop one Authorization Basis (AB) change that covers both of these phases. Oxygen control using the normal and standby nitrogen systems will be credited as the primary deflagration control. Fuel control will be maintained as a defense-in-depth control. The staff and site reps continue to discuss the implementation of both oxygen and fuel controls. WSRC currently estimates that tank heat-up will begin in mid-December.

**3H Evaporator:** The 3H evaporator is currently shutdown because the primary drop tank (tank 30) is approaching the AB temperature limit (80°C). This appears to have been caused by the limited amount of material in the tank, the high specific gravity, and limitations of the tank cooling coil system. WSRC is currently evaluating potential options to restart the evaporator. In addition, WSRC is developing an AB change to increase the tank temperature limit.