

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 2, 2002

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 August 2, 2002

Plutonium Packaging and Stabilization: The purpose of the FB-Line Packaging and Stabilization project is to provide site capability to package plutonium metal and oxide in accordance with DOE-STD-3013. Because of the discrete nature of this project, DOE agreed to a phased approach for project construction activities (site rep weekly 4/26/02). Critical decisions 3e and 3f were approved in July, which allowed WSRC to proceed with storage rack, digital radiography and outer can welder activities. The 3rd level rack fabrication is complete. Outer can welder fabrication is also complete with functional testing on-going. WSRC appears to be on schedule to meet the a startup date of April 2003 and October 2003 for the outer can welder and furnaces, respectively. This schedule is consistent with the recently submitted Recommendation 94-1/2000-1 implementation plan revision.

FB-Line: WSRC is currently packaging RFETS plutonium metal into inner DOE-STD-3013 cans using the bagless transfer system in FB-Line. Last week, WSRC identified transferable contamination as high as 60,000 d/m in the weld area of 3 bagless cans. Similar problems have not been experienced during previous operations involving plutonium buttons. WSRC believes that the bagless can inner surfaces are becoming contaminated as the metal pieces are placed in the can prior to welding. A convenience can has been developed to minimize contamination of the bagless can and will be tested early next week.

Americium/Curium: The cold run initiated last month was terminated and then postponed because the F-Pump Tank-2 (FPT-2) transfer pump could not maintain an adequate flow rate when operated concurrently with a newly installed agitator (site rep weekly 7/5/2002). Subsequent efforts to resolve the issue indicated that the agitator disturbed the legacy heel in the pump tank more than expected, thus leading to a higher density slurry that challenged the capacity of the pump. After removing much of the legacy heel, pump problems persisted and it was determined that air entrainment from agitation was also hindering pump performance by causing cavitation.

In response to these problems, WSRC explored making the Am/Cm transfer without agitation in FPT-2 and concluded that this approach is within the safety envelope outlined in the current authorization basis change package. It does appear unlikely that Am/Cm solids will settle out due to the low solid weight percent of the slurry (~2.3 wt%) and the post-transfer flushing should be sufficient to remove any appreciable Am/Cm hold-up should settling occur. WSRC expects to commence the rescheduled cold run on August 12.

DWPF Activities: This week, one of the four dome heaters on the DWPF melter failed. The remaining three heaters are sufficient to maintain the safety-related vapor space temperature limits. However, a change in operating strategy (lower feed rate to melter) is required to avoid unacceptable pour instability. A new pour spout insert that exploits gas expansion in a closed volume to form a leak-tight seal should also help to stabilize the pour stream. Though WSRC continues to develop innovative compensatory strategies to extend the operational life of the melter, the continued accumulation of impairments is significantly hampering performance.