

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 12, 1997

MEMORANDUM FOR: G. W. Cunningham, Technical Director
FROM: J. Kent Fortenberry / Joe Sanders
SUBJECT: SRS Report for Week Ending September 12, 1997

Impact of Delaying ITP Operation - WSRC previously stated that ITP must operate by November 1998 to maintain tank farm capacity (4/3/97 Board visit to SRS). Proposed FY99 scope reductions (8/29/97 weekly report) would delay ITP operation. WSRC has now determined that without ITP operation, there is enough tank capacity until November 2000. Also, permitted space is available in five Type I tanks (Tanks 4,5,6,7,and 8) that could extend this time to the year 2004. Secondary confinement of Type I tanks is a steel pan extending a height of five feet. Use of Type I tanks would have to be negotiated with the state.

HLW Tank Inspection Program - Eleven tanks have known leaksites. In two of these tanks the waste has been removed. In the other nine tanks, the liquid level has either been minimized or is kept below the lowest leaksite. All tanks receive biannual inspection and those with known leak sites receive annual inspections. None of the known leaksites are currently leaking. Tank wall thinning is not occurring. The leaksites have all been attributed to nitrate-induced stress-corrosion cracking at or near weld seams. Controls are in place to limit nitrate concentration, and the newer Type III tanks were stress-relieved (1100F) prior to being placed in service. No Type III tanks have known leaksites. Based on limited data, WSRC feels there has been no crack propagation. However, between the 1995 and 1996 inspections, Tank 15 developed an unusual crack above the waste level. This Tank 15 crack will be further characterized this fall. During future waste removal from these nine tanks the liquid level will, in some cases, exceed the level of the leak site(s).

Spent Nuclear Fuel (SNF) Alternate Technology Program - To prevent continued wet storage of aluminum SNF, DOE decided to "select, develop, and implement" alternate treatment and/or packaging technologies by the year 2000. In this decision, DOE pointed out that if a new technology was not ready for implementation by the year 2000, conventional processing would be considered (see FRR SNF EIS Record of Decision). Currently, an EIS is being drafted to address specific SNF management activities at SRS. This EIS is expected to be completed early next year. WSRC has identified melt & dilute as the preferred treatment technology. The SNF would be melted at high temperature and mixed with non-enriched uranium and a neutron poison. The considerations that led to the melt & dilute preference were criticality, proliferation, volume reduction, material stability, and stakeholder concerns. The biggest challenge with melt & dilute will undoubtedly be handling the volatile fission products. Implementation will require a Transfer and Storage Facility to crop and cold-vacuum-dry the SNF and a Treatment Facility to melt, dilute, and seal-weld the SNF into an inerted canister for ultimate disposal in the geologic repository. DOE has estimated that the melt & dilute technology would not be operational until 2004 to 2007. The ROD phrase "implemented by the year 2000" is being interpreted to mean having started the new treatment facility and equipment design by the year 2000. DOE-SR has asked the National Research Council to review their Alternate Technology Program. This review should start next month and produce a final report around February 1998.