DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 23, 1998

MEMORANDUM FOR: G. W. Cunningham, Technical Director
FROM: J. Kent Fortenberry / Joe Sanders
SUBJECT: SRS Report for Week Ending January 23, 1998

FA-Line Tank Overflow - During a recent transfer of depleted uranyl nitrate solution at the F-Canyon A-Line facility, the receiving tank was overfilled and uranyl nitrate overflowed into an outside sump. Although a significant contributing factor to this event was a failed level indication on the receiving tank, other contributing factors included the failure to constantly monitor the transfer, the failure to monitor source tank level, and the failure to secure the transfer after transferring the expected amount of material. Initial review of corrective actions taken by WSRC as a result of this event did not appear adequate. Expectations of operator actions during transfers had not been formalized and the specific procedure involved had not been substantially improved to prevent recurrence. Also, real time tank level monitoring was being performed using weight factor, and the conversion to true tank level using specific gravity was not consistently established and was not included in the transfer procedures to provide simple, definitive tank level limits. Subsequent discussions with WSRC and DOE-SR indicate agreement that more needs to be done. WSRC now plans to develop a tank transfer protocol that can be formally communicated to their operators. WSRC also plans to develop a consistent, proceduralized method of establishing true tank levels.

Review of transfer operations at the H-Canyon Outside Facilities did not reveal the same deficiencies. The H-Canyon Outside Facilities operations are aided by a Distributed Control System as well as by a written standing order that addresses some aspects of tank transfers. The H-Canyon Outside Facilities is currently revising operating procedures in preparation for resumption of HEU solution receipt from H-Canyon operation. The most likely occurrence during these renewed transfers of HEU solution is transfer errors involving mispositioned or leaking valves. WSRC should take this opportunity to provide instructions for monitoring not only the source and receipt tank, but also other potential receipt tanks in order to quickly detect any transfer error. This information is being discussed with DOE-SR and WSRC.

Tritium Extraction Facility (TEF) Hazards Analysis - WSRC has completed the Hazards Assessment Document and the Hazards Evaluation Tables to be used in developing the TEF Preliminary Safety Analysis Report. TEF will be classified as Hazard Category 2, consistent with DOE Standard 1027-92. The safety strategy likely to be used in the design of TEF will be to limit the inventory of tritium in the facility to approximately 8 kilograms. The excess tritium inventory would continue to be stored on hydride storage beds in the 217-H vault. Limiting the tritium inventory in TEF will likely result in the following safety class functions: fire detection and suppression systems, the ability of the structure to maintain its integrity during and after design basis natural phenomena hazard events, and possibly fire rated barriers. This strategy is similar to the planned functional classification strategy for Building 233-H (formerly RTF) to be incorporated in the upcoming Consolidated Tritium Facilities SAR.