DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 21, 1997

MEMORANDUM FOR: G. W. Cunningham, Technical Director

FROM: J. Kent Fortenberry / Joe Sanders

SUBJECT: SRS Activity Report for Week Ending March 21, 1997

Bill Yeniscavich and Tonya Huntley were onsite this week reviewing vessel integrity at F and H- Canyon and leased nitrogen systems at DWPF and ITP.

H-Canyon Qualification Oral Boards - Operator, shift supervisor, and shift manager oral boards were observed for H-Canyon dissolving and head end activities. All of these boards covered processing and facility aspects reasonably well. However, the DNFSB site rep informed WSRC that the supervisor and manager boards did not adequately challenge those supervisory functions. There were very few scenario based questions, and almost no mention or discussion of the use of Alarm Response Procedures, Abnormal Operating Procedures, Technical Safety Requirements, determining of equipment operability, or determining reportability. WSRC management agreed and plans to augment training in these areas. This will be accomplished during cold runs using the senior supervisory watch to assess the use of LCOs, determining reportability, etc. and to evaluate shift supervisor and manager response to various scenarios. A TSR/LCO question bank has been established and about 30 alarm based scenarios have been developed. This additional training will be added to the qualification cards.

DWPF Slurry Mix Evaporator (SME) Cooling Coil Failure - A cooling water leak into the SME was detected early last week. A total of ~200 gallons of water leaked into the SME. The agitator and coil assembly were removed from the tank and inspected. A hole approximately ¼" in diameter was discovered in the coil and a larger hole was observed in the agitator blade. The holes were created by erosive wear by the glass frit traveling at high speeds in the localized region near the bottom of the tank. Similar erosive wear was observed when the tank was inspected 18 months ago prior to radioactive operations. At that time, ultrasonic testing was used to identify regions of significant wear in the Hastelloy piping. In addition, Stellite coating (erosion resistant alloy) was applied to parts of the agitator blade. The cooling coil and agitator blade will be decontaminated and inspected this weekend. At that time, a decision will be made whether to repair or replace the coil assembly.

A leak into the SME from the cooling coil, if undetected, could lead to an overflow into the Chemical Process Cell sump. This does not impose a significant hazard and would, in fact, be returned to the tank. An undetected leak is a very unlikely condition because multiple SME high level and cooling water surge tank low level alarms would be received.

Tank Closure Mixing Demonstration - As mentioned in last week's report, problems are being experienced demonstrating mixing of residual sludge with the reducing grout to support closure of Tanks 20 and 17. Two demonstration pours were performed this week at ¼-scale (~22 ft diameter). In performing the scale-down of the first demonstration, the viscosity of the grout was scaled up by a factor of 8; this change was later

discovered to be incorrect. The concrete was relatively immobile and the resulting information proved to be of limited use. This deficiency was corrected on the second pour.

The grout was spread at six locations on the outside perimeter and then in the center of the mold, simulating the riser locations in the tanks. Half the grout (~4 yards) was added initially, and only ~25% of the sludge was encapsulated; the remaining sludge was displaced to the top. The grout was allowed to dry and then dry mix was spread on top to bind the displaced sludge. Finally, the remaining 4 yards of reducing grout was poured. Core samples will be taken next week to evaluate the acceptability of this method. It is not certain whether the sludge/dry mix mixture will be chemically and physically bound up between the two layers of hardened grout, making it resistant to long-term leaching from groundwater. Furthermore, a mechanism to spread dry grout in the tanks will need to be developed.

Board Members