DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 2, 1997

MEMORANDUM FOR: G. W. Cunningham, Technical Director

FROM: J. Kent Fortenberry / Joe Sanders

SUBJECT: SRS Activity Report for Week Ending May 2, 1997

Todd Davis and Dominic Napolitano were onsite this week reviewing instrumentation and control systems at the HLW Tank Farm and the In-Tank-Precipitation (ITP) facilities. Kent Fortenberry was in Washington, D.C. on Wednesday and Thursday for staff planning meetings and for Board briefings concerning SRS canyon utilization and tritium activities.

SRS Annual Emergency Preparedness Drill - The annual drill occurred on Wednesday, April 30. The primary scenario involved an earthquake of Magnitude 6 impacting the site. Participation was limited to H-Tank Farm (which includes ITP). The moderate intensity earthquake caused steam coils in the 2H Evaporator to fail, overpressurizing and eventually rupturing the pot. In addition, Tank 43 began to siphon as a result of a Chromate Cooling Water failure in the tank coupled with a rupture of the return line in the pumping station. The response to these events was consistent with the expectations of the scenario developers, albeit much slower. For example, a Site Area Emergency was declared about three hours into the scenario, but this declaration was expected to occur within an hour. During the drill, an actual fire alarm in the building housing the H-Tank Farm primary control room caused the drill to be temporarily suspended while the Control Room was evacuated.

Pu-239 Stabilization in HB-Line - Plutonium-239 scrap from FB-Line will be packaged and transferred to H-Area for stabilization in Phase I of the HB-Line. Dissolution is scheduled to start August 11, 1997. Safety documentation for Pu-239 processing in HB-Line, including the criticality evaluation and double contingency analysis, should be completed this May, and cold chemical runs will be conducted during June. WSRC is proposing that readiness be assessed using a WSRC Readiness Assessment followed by a DOE-SR Readiness Assessment.

Non-Nuclear Reconfiguration (NNR) Environmental Conditioning (EC) Chambers - The NNR project provides SRS with the reservoir testing capability that formerly occurred at Mound. Part of this project includes the installation of EC chambers in Building 233-H (formerly RTF). Their purpose is to precondition reservoirs to simulate the stockpile-to-target sequence prior to function testing. The three EC systems include a centrifuge, vibration tester, and mechanical shock (drop) tester. The centrifuge simulates the loads a weapon may experience during missile launch and re-entry into the atmosphere and can achieve accelerations up to 400g. The vibration tester simulates the effects of transportation and flight stress. The mechanical shock tester simulates sudden and sharp jolts, and is capable of achieving an acceleration of 10,000g and a minimum impact duration of 0.3 milliseconds. The chambers are expected to be operational in the Spring of 1998.

An Addendum to the Building 233-H SAR to support the NNR project has been drafted and includes the EC chambers. The EC chambers impart a large amount of mechanical energy to the reservoir and holding fixture.

As a result, mechanical failure of the device causing the reservoir to release its contents is a new and unique hazard. The quantity of hydrogen gas, if released to the confined volume of the chamber, could possibly result in a deflagration or detonation producing the more radiotoxic tritiated water vapor. As a result, nitrogen inerting/stripping or electrical isolation (for the shock tester only) is being backfit into the design. This potential hazard and its prevention/mitigation strategy is new to this facility and may deserve further scrutiny.