DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 14, 1997

MEMORANDUM FOR: G. W. Cunningham, Technical Director

FROM: J. Kent Fortenberry / Joe Sanders

SUBJECT: SRS Activity Report for Week Ending March 14, 1997

TRU Waste Drum Venting System - TRU waste, stored in 55-gallon drums awaiting transfer to WIPP, now require a carbon-filtered vent to prevent the build-up of flammable gases. Older drums of TRU waste were not vented. At SRS, about 8800 unvented 55-gallon drums of TRU waste are stored under earthen cover. In addition to being unvented, these drums have reached, or are reaching, their 20 year life expectancy. These drums are being retrieved, vented, purged of hydrogen and volatile organics, and provided with filter vents. Venting, purging, and filter installation is being done in the Drum Venting System (DVS). The drum lid is punctured, the headspace gas is sampled (GC), the drum is purged with nitrogen gas if needed to reduce hydrogen or volatile organics, and a filter vent is installed. All of these operations take place remotely inside a drum cabinet.

The DVS has been designed to contain a pressure surge associated with a deflagration event. This design assumes a maximum drum pressure of 136 psig. The volume of the drum cabinet and duct work is relied on to dissipate this pressure to below 15 psig, which is vented through the HEPA-filtered exhaust. A louvered damper prevents backflow through the ventilation inlet.

H-Canyon Safety Class Equipment - An event occurred this week that further illustrates inconsistencies in the classification of safety equipment at H-Canyon (see SRS Weekly Report of 02/21/97). A non-safety breaker providing normal (offsite) power was returned to service following calibration in the electrical shop. The breaker's auxiliary contacts had been "tied open" as part of the maintenance and had not been restored. The breaker re-test was a simple continuity test and did not reveal any problem. During a subsequent diesel load test, failure of this breaker to open on a low-voltage condition prevented one of the safety related emergency D/G breakers from closing. All three H-Canyon safety related breakers rely on a non-safety breaker to open before they can function. F-Canyon has an identical arrangement. Discussions continue with both DOE-SR and WSRC.

Actinide Packaging & Storage Facility (APSF) - The subcontract to perform preliminary and final design of APSF was awarded to Stone & Webster Engineering Corporation (SWEC) for $12.8M. The total estimated cost of the facility is $167.5M. The current projected vault inventory, including material receipts from other sites, should occupy ~4,700 of the facility's 5,000 storage positions. This does not provide an excessive amount of surge capacity, but the facility is being designed so that future expansion is not precluded. In addition to the vault, the facility will include a 200 position water-cooled storage array for Pu-238 in EP-60/61 containers

and a standardized Plutonium Stabilization and Packaging System (PUSPS). The facility will be buried and will be located in F-Area behind the Naval Fuels Facility. Certain critical dates are as follows:

- Feb 1998 - Complete detailed design
- Aug 1998 - Award subcontract for construction (and begin construction)
- May 2001 - Complete construction (and begin startup testing)
- Nov 2001 - Begin operation
- May 2002 - All SRS Pu metal and oxide repackaged and stored

Tanks 20 and 17 Closure Status - Two recent conditions impact the closure of Tanks 20 and 17. First, photographs taken following the transfer of tritiated solution from Tank 17 indicate that more sludge remains (~5,000 gallons) in the tank than was expected; the slurry pumps operated in Tank 17 during the transfer were apparently ineffective. WSRC proposes to remove additional sludge using a steerable water cannon (similar in design to those installed on fire engines) to push the suspended sludge toward an air-driven pump designed to handle fluids with a large amount of suspended solids. Based on concentration averaging with the two feet of reducing grout to be added to the tank, the residual sludge needs to be less than 700 gallons.

The second condition involves the effective mixing of the residual sludge with the reducing grout. At Concrete Testing Laboratory (CTL), recent simulations of grout being added through the central tank riser showed that the grout tends to displace the less dense sludge creating pockets of floating sludge on the outer circumference of the tank. As a result, a new pouring scheme has been proposed that involves adding the reducing grout consecutively through six risers near the outside perimeter of the tank. WSRC contracted a mixing expert who agreed that this method of addition should promote effective mixing. Simulations of this pouring scheme are expected to be conducted soon.

Board Members