

## **DEFENSE NUCLEAR FACILITIES SAFETY BOARD**

January 16, 1998

**MEMORANDUM FOR:** G. W. Cunningham, Technical Director  
**FROM:** J. Kent Fortenberry / Joe Sanders  
**SUBJECT:** SRS Report for Week Ending January 16, 1998

Todd Davis and outside expert Ralph West were onsite this week reviewing operational readiness for restart of H-Canyon Phase II operations.

**Tritium Extraction Facility (TEF) Geotechnical Investigation Status** - As noted in the weekly report from 11/7/97, a two-phase geotechnical investigation is being performed to support the design and construction of TEF. Phase I included 16 deep seismic piezocone penetration tests (SCPT) and 3 shallow SCPTs. Several of the deep cones indicate lenses of softer material (shear wave velocities between 650 - 900 feet per second) at a depth of approximately 120 -140 feet within the Santee Formation. A key activity in Phase 2 will be taking 5 deep standard penetration test borings beneath the planned footprint of the facility. The final report, which will include laboratory tests and final geotechnical analyses, should be completed by the end of March.

**Public Meeting on Accelerator Production of Tritium EIS** - A meeting was held this week in North Augusta to present the preferred design and support features for the APT which, if selected from the dual-track strategy, would be constructed at SRS. The Record of Decision should be completed in August. The current projected need date for a new tritium supply source is approximately 2006 based on the 1996 Nuclear Weapons Stockpile Plan, which uses START I stockpile levels. The following are the preferred alternatives for design and support features based on the EIS evaluation:

- klystron radiofrequency power tubes (vs. inductive output power)
- superconducting niobium cavities over the high-energy acceleration region above 211 MeV and room temperature operation over the low energy acceleration region (vs. Room temperature operation for all accelerating cavities)
- continuous circulation of helium-3 feedstock through the target-blanket assembly with separation of tritium in the connected separation facility (vs. irradiation of Li-6 targets with extraction at TEF)
- mechanical draft cooling towers with river water makeup to remove the approximately 400MW of heat generated from operation of the accelerator (vs. groundwater makeup, using the existing K-Reactor cooling tower, or once through cooling using river water)
- location 3 miles northeast of H-area on F-Road (vs. 2 miles northwest of H-area)
- purchase of electricity, up to ~600 MW, from existing grid capacity (vs. constructing a new coal- or natural gas-fired plant).