

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 31, 1997

MEMORANDUM FOR: G. W. Cunningham, Technical Director
FROM: J. Kent Fortenberry / Joe Sanders
SUBJECT: SRS Report for Week Ending October 31, 1997

The Americium-Curium Test Melter Failure last week was apparently due to fatigue in the weld metal at both lower bus bar connections. This melter had seen less than ten full cycles (cold to hot), and about six smaller cycles (1000C to 1400C). The melter had been in operation about 260 days, with a total time at temperature of about 100 days. WSRC believes a more flexible bus bar would prevent this failure. During inspection of the failed melter, significant splatter/deposits were seen at the top of the melter which would have eventually plugged the offgas system. This finding introduces the need to reassess melter parameters (reduce feed rate, lower melt surface height, add a third heating zone, separate feeding of frit and liquid, etc.). DOE-SR is putting a hold on construction and prototype fabrication and asking for a re-assessment of this program.

The Nuclear Materials Processing Needs Assessment Study will determine whether additional materials might require the SRS canyon facilities for stabilization or disposition. This would lead to a recommendation of whether or not the phased canyon strategy should be revised. The group met at SRS this week and hopes to complete their work by December. A clear list of all materials examined will be binned into four categories: (1) materials already in a form suitable for final disposition, (2) materials for which an adequate processing capability is already available, (3) materials for which canyon processing is not compatible, and (4) materials which may require (as primary or backup) SRS canyon facilities. For those materials in this fourth category, the study will attempt to relate this potential need for SRS canyon capability to a recommendation for maintaining canyon processing capability. Significant issues include: (1) ensuring **all** applicable material has been identified and assessed, and (2) ensuring that the need for maintaining either primary or backup processing capability is appropriately related to uncertainties in the alternatives to canyon processing.

The Accelerator Production of Tritium (APT) External Review Committee held their semiannual meeting this week to review the status of design. The APT design team seems to be integrating hazard/accident analysis into the design process. A Preliminary Hazards Analysis has been completed and accidents have been identified for further analyses. The largest release potential is tungsten vaporization and release of spallation products following a loss of cooling in the target-blanket assembly. The design team claimed to have mitigated this accident by using inconel cladding and reducing the energy deposition rate (primarily by increasing the beam area impinging on the target). Initial geotechnical field investigations have been completed to evaluate the selected site and to commit the 'new' SRS seismic response spectra to the selected APT site. Additional field work will begin in the next 2-3 months to obtain more information for structural design.

Excess Facility Disposition - WSRC has finally begun a risk prioritization of inactive facilities. WSRC is collecting field data for an initial screening of these facilities. High risk conditions identified will then be evaluated further. By July, 1998 WSRC intends to issue a prioritized list of facility disposition plans, based on these evaluations, with cost and schedule estimates. Because of the lack of funding for facility disposition activities, prioritization will be heavily influenced by the cost/mortgage reduction opportunities.