

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 21, 1999

MEMORANDUM FOR: G. W. Cunningham, Technical Director
J. Kent Fortenberry, Deputy Technical Director
FROM: C. H. Keilers / R. T. Davis
SUBJECT: SRS Report for Week Ending May 21, 1999

A staff team was on site this week reviewing the design of the Tritium Extraction Facility (Gwal, Hadjian, Roarty, Shields, White, Yeniscavich, and Zavadoski).

Recommendation 94-1. Shipment of sand, slag, and crucible (SS&C) residues from RFETS to SRS has stopped because of two issues associated with the 9975 shipping container Safety Analysis Report for Packaging (SARP). The first issue is due to container design features and tolerances that are different than those for the prototype that was originally tested for transportation accidents. SRS is updating the container design and testing to resolve this. The second issue results from measurements of hydrogen generation rates from RFETS SS&C that are greater than an order-of-magnitude higher than predicted by the SARP model. This leads to a postulated detonation scenario for the container.

The SARP gas generation model, based on relatively pure oxide (85%), predicts that radiolytic decomposition dominates. However, preliminary testing of RFETS SS&C indicates that thermal decomposition may release more gas. SRS personnel speculate that the cause may be chemically reactive material freshly exposed during preparations at RFETS and that it may be possible to address the detonation scenario by heat treating the SS&C, inerting the containers, or modifying the containers. Alternatively, RFETS may pursue shipping this material to WIPP (see this week's RFETS site rep report). Since F-Canyon is currently lined up to process RFETS SS&C, SRS may need to expedite preparing for other materials to avoid idle disolvers and delays in processing 94-1 materials.

Fire Protection System (FPS) Testing - During the last four months, several deficiencies have been identified with the site wide FPS testing program. These deficiencies include a lack of timely completion of testing, as well as weaknesses in configuration management, procedures, control of procedures, and integration of the fire hazard analysis with the authorization basis. Because of delays associated with implementing corrective actions, more than 70 systems were not tested within the required time. Additionally, because of an error in the work management system, many of the delinquent tests were not properly identified and required compensatory actions were not taken. Facility line management does not appear to be taking an active role to ensure that their systems are tested and maintained properly. The current backlog of delinquent testing has been reduced to 30 systems. A formal root cause analysis and corrective action plan is expected by the end of May.

Waste Leak During Transfer - During a transfer of recycle waste (low curie content) from DWPF to tank 21, a safety class conductivity probe alarmed for the tank 21 valve box. The transfer was stopped immediately and approximately 5 gallons of waste was retrieved from the valve box. This was the first time that this valve box has been used since it was installed in 1997. The leak likely occurred because of loose pipe connectors in the valve box. Operators were able to tighten connectors several turns when checked after the leak. During a review of this occurrence, WSRC also identified that required Authorization Basis controls for verifying that conductivity probes and radiation monitors are available along credible transfer paths were not included in the procedure.