

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 24, 1998

MEMORANDUM FOR: G. W. Cunningham, Technical Director
FROM: J. Kent Fortenberry / Joe Sanders
SUBJECT: SRS Report for Week Ending April 24, 1998

Rich Tontodonato, Matt Moury, and Bob Lewis were onsite this week reviewing the High-Level Waste Tank Farm Authorization Basis, Tank Farm Conduct of Operations, and Tritium Facilities Integrated Safety Management.

HLW Salt Disposition Alternatives Study - Phase I of this study was completed on time with the issuance of the Preconceptual Phase I Summary Report. The primary result of this Phase I report is the identification of an initial list of 18 alternatives refined from about 130 preliminary alternatives. Five of the alternatives are variations of the ITP process including Reduced Temperature ITP, Catalyst Removal ITP, Enhanced Safety Features ITP, Potassium Removal ITP, and a Small Tank TPB Precipitation. Six ion exchange alternatives were identified: Elutable, Acid Side, Zeolite, and Crystalline Silicotitanate Ion Exchange, all followed by DWPF vitrification; Crystalline Silicotitanate Ion Exchange followed by vitrification at a new facility; and Crystalline Silicotitanate Ion Exchange converted to a ceramic waste form. Two solvent extraction alternatives were identified: Caustic Side and Acid Side Solvent Extraction, both followed by DWPF vitrification. Two alternatives utilize monosodium titanate (MST) to separate strontium, plutonium and uranium for DWPF vitrification and grouting of the partially decontaminated salt solution at either Saltstone or a new facility that might use the HLW tanks for grout disposal. The remaining three alternatives are Fractional Crystallization followed by DWPF vitrification, Electrochemical Separation and Destruction followed by DWPF vitrification, and Direct Vitrification of the salt solution in a new vitrification facility.

Phase II activities will consist primarily of preliminary risk assessments (technology, interface, safety, design, and cost/schedule) of these 18 alternatives in order to establish a 'short list', maybe 5 alternatives, for more detailed evaluation in Phase III of the study. The 'short list' from Phase II should be defined by mid-May 1998. Phase III activities will involve more detailed assessment of the 'short list' alternatives leading to a preferred alternative recommendation by September 1998.

Contractor ORR on Tritium Reservoir Environmental Conditioning - WSRC performed their ORR on the drop tester, shake table, and centrifuge over the last two weeks. The findings generally indicate that the ORR was premature; line management should have been better prepared prior to allowing the independent contractor ORR to begin. The chamber operating procedures, of which there are only a hand full, were not in good shape (e.g., round sheets required revisions to clarify maximum values and normal operating ranges and LCO surveillances were not in procedures which credited implementation of the LCO Surveillance Requirements). In addition, certain Alarm Response Procedures had not yet been written. The duration of the ORR was significantly extended because the second operator to become qualified initially failed the oral boards but passed earlier this week; two qualified operators are required for these operations. The site reps observed a drill in which nitrogen inerting was lost during centrifuge operation. While the drill performance was satisfactory, the safety-related interlock designed to shut down the centrifuge on high oxygen within the chamber failed. The DOE ORR is scheduled to begin May 4th but may be delayed to resolve these findings.