

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 14, 1997

**MEMORANDUM FOR:** G. W. Cunningham, Technical Director

**FROM:** J. Kent Fortenberry / Joe Sanders

**SUBJECT:** SRS Report for Week Ending November 14, 1997

Matt Moury and Jim McConnell were onsite this week reviewing tritium activities and facilities.

**Dissolvable Nylon Bags** - In preparing for the dissolution of Sand, Slag & Crucible (SS&C) in the F-Canyon, WSRC identified a dissolvable nylon material that could be used for contamination control during material handling and charging. SS&C, sorted and packaged into a sealed foodpack can, is bagged out of the glovebox using this nylon material. The resulting contamination-free package is then sealed inside a second larger foodpack can which can be charged directly to the canyon dissolver. The nylon material was tested at SRTC to demonstrate its effect on dissolver chemistry, and also to determine offgassing characteristics and the effects of radiation. Unfortunately, the actual use of this nylon material was not tested. During recent bag-out operations, the nylon developed what appears to be small 'flex-cracks', releasing contamination and activating HVAM (High Volume Air Monitoring) alarms. The different behavior of the nylon under the vacuum conditions of the glovebox makes the bag-out operation more difficult. The nylon clings to the can and requires a lot more handling to accomplish the bag-out. After about five bag-outs, the material begins to develop these 'flex-cracks'.

WSRC is currently looking into several solutions including increasing the nylon thickness, using a different (more pliable) form of nylon, and performing a preconditioning of the nylon to restore flexibility. If SS&C is to be shipped to SRS from RFETS, it would be desirable to have RFETS utilize dissolvable material in packaging their SS&C. The site reps talked to DOE-SR about ensuring any unique attributes of RFETS packaging are considered in resolving this problem.

**Tritium Extraction Facility (TEF) Research, Development and Demonstration (RD&D) Program Plan** - The first revision of the TEF RD&D program plan was recently completed. Systems for target handling, preparation (perforation to allow extraction), inerted transporting, and extraction (within a high temperature - high vacuum furnace) are significantly different from those which have been proven. This program culminates in the development and operation of a full-size demonstration for the above systems in May - September 2000. This will include extraction from a batch of 300 prototypical rods loaded with deuterium. The funding for this program is estimated to be \$5.6 Million (not including furnace and prototype rod acquisition), with almost all activities occurring at SRS. Functional performance criteria for the target rod and furnace are being developed by PNNL.

**Actinide Packaging & Storage Facility** - WSRC and Stone & Webster are developing a program plan to address recent concerns from the review of seismic and structural analysis (see 11/7/97 weekly report) and more general concerns with WSRC's lack of involvement and oversight in the design work. This plan will address general responsibilities, periodic technical reviews (weekly conference calls and monthly review meetings), specific geotechnical issues (additional site characterization, settlement, soft zone analysis, liquefaction analysis, etc.), and soil-structure interaction issues (assumed loadings, analysis/modeling, etc.). This program plan should be available for review in a couple of weeks.