DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 10, 2004

TO: J. Kent Fortenberry, Technical Director
FROM: Donald Owen, Oak Ridge Site Representative
SUBJ: Activity Report for Week Ending June 11, 2004

The site rep. will be out of the office on Friday.

A. Building 9212 Microwave Casting. As reported on September 13, 2003, preparations had been in progress to use a prototype microwave caster in E-Wing using copper as surrogate material. YSO had issued their Safety Evaluation Report (SER) for the surrogate material campaign. Since September, operations with copper (four runs) have been performed to test, develop procedures and train personnel on the microwave operation. BWXT considers that this initial test phase was successful and plans to continue operations with copper to gain additional experience prior to operating the prototype with enriched uranium. Among several advantages cited by BWXT of microwave casting over the current casters in E-wing is that water cooling is not needed and a safety basis control to detect water is not required.

BWXT management presented their plans on proceeding with microwave casting of enriched uranium to YSO. The prototype campaign is to consist of up to 15 casting runs. Safety basis changes are being completed and line management declaration of readiness is projected by mid-August. The level of readiness review is under discussion between YSO and BWXT and development of a revision to the BWXT Startup Notification Report (the formal mechanism for YSO to approve the level of startup review) to address microwave casting is in progress.

B. Building 9212 Wet Chemistry Startup/Conduct of Engineering. As reported on May 21st, YSO had been performing a review of personnel, training, equipment and procedures for the Denitrator, Primary Extraction and Secondary Extraction processes (following a site rep. and staff inquiry on not starting the extraction processes with enriched uranium in more than one year since startup authorization was granted by YSO). This week, YSO issued the report of its review with no findings. A few observations including possible supervisor turnover concerns in the near future and recommended improvements to the checklist for "First Use" operations were noted in the report.

Regarding the Denitrator process, YSO had requested that BWXT evaluate and document the cause(s) of the initial operation failure to thermally decompose the uranium-bearing feed solution to product oxide (see site rep. report of March 26th). BWXT provided a report of their causal analysis to YSO this week. The report notes that an engineering change had mis-identified the primary temperature indicating control thermocouple as a bed element rather than a shell element (as a result the bed was at a lower temperature than intended). The report also notes an engineering change to add a new hard pipe and pump for flushing the feed line that allowed water to enter the line when not intended (the pump did not prevent flow from the water head in the system). Corrective actions include further evaluation of these engineering design changes by Y-12 Engineering Division management. YSO management noted to the site rep. that the results of this review are intended to be factored in with actions under development from a problematic billet basket modification in Building 9215 (see the April 30th site rep. report).

C. Y-12 Criticality Safety. As reported May 21st, three members of DOE's Criticality Safety Support Group (CSSG) had performed a review of criticality safety with a focus on fissile solution operations in Building 9212. The CSSG team had provided their review report to YSO recommending actions on several issues. This week, YSO formally transmitted the CSSG team's report to BWXT. YSO requested that an action plan be submitted by June 30th.