

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 8, 2006

TO: J. Kent Fortenberry, Technical Director
FROM: R. Todd Davis/Donald Owen, Oak Ridge Site Representatives
SUBJECT: Activity Report for Week Ending December 8, 2006

Staff members F. Bamdad, D. Gutowski and D. Minnema visited the Oak Ridge National Laboratory this week to review the disposition project for uranium-233. On Thursday, Mr. Bamdad also met with Y-12 personnel to discuss the Building 9212 Facility Risk Review. NNSA plans to discuss this review with the Board next Thursday.

A. Conduct of Operations/Uranium Holdup Survey Program. In October, Nuclear Criticality Safety personnel declared a criticality safety deficiency at the Enriched Uranium Metalworking Building for failure to complete uranium holdup surveillances over several months (see the 10/27/06 site rep. report). Based on the significance of this issue, BWXT management assigned an independent investigator to review this event. The investigation was recently completed with the results briefed to YSO management this week. The investigation team concluded that failure to appropriately perform these surveillances was caused by inadequate holdup survey program ownership, compliance, oversight, communications and feedback. The team noted that similar issues were identified during investigation of the vacuum pump filter holdup earlier this year (see the 7/28/06 site rep. report). In addition, contributing factors identified included poor conduct of operations, misuse of grace periods and lack of prioritization by facility operations personnel. The team provided eight specific recommendations to address the causal factors. BWXT plans to evaluate these recommendations along with previously identified holdup survey program corrective actions to determine a path forward that includes all appropriate corrective actions.

B. Uranium-233 Disposition at ORNL. As reported on October 13th, a revised Preliminary Documented Safety Analysis (PDSA) had been prepared and other reviews completed to support Critical Decision-2 (approve performance baseline) and to support Critical Decision-3A (start long-lead equipment procurement) for the Uranium-233 Down-Blending and Disposition Project in Building 3019. Approval actions are now anticipated in the next few weeks. This week, the staff and site rep. reviewed the current down-blend system design including proposed Building 3019 modifications. DOE-ORO and Isotek personnel noted that depressurizing and processing of sodium-fluoride (NaF) traps containing uranium-233 hexafluoride from the Molten Salt Reactor Experiment has been added to the down-blending project. This change will require an additional glovebox for depressurizing the NaF traps.

The revised PDSA has not been approved by DOE-ORO. Major safety systems proposed in the PDSA include: safety-class non-combustible structures and equipment for the process cells for fire protection; safety-significant radiation shielding; and safety-significant process cell floors and enriched uranium solution process equipment with safe geometry from criticality, as well as a down-blend tank level interlock for opening the enriched uranium solution transfer valves. DOE-ORO and Isotek personnel noted that further work on the PDSA remains including incorporation of detail on the criticality accident alarm system, evaluation of active confinement ventilation system needs, and safety classification of fire protection systems. The staff questioned integration of the project fire hazard analysis (FHA) with the PDSA. DOE-ORO and Isotek personnel noted that additional work is also needed to revise the project FHA and ensure that it is consistent with and supports the PDSA.