

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 19, 2004

TO: J. Kent Fortenberry, Technical Director
FROM: Donald Owen, Oak Ridge Site Representative
SUBJ: Activity Report for Week Ending March 19, 2004

A. Y-12 Building 9212 B-1 Wing Fire Protection. YSO has submitted their formal recommendation on B-1 Wing fire protection to NNSA Headquarters. The YSO recommendation forwards BWXT's Performance Based Analysis (PBA) of B-1 Wing fire protection proposing upgrades that includes installation of sprinklers on the first floor, a new system shutdown interlock and relocation of certain equipment. The YSO recommendation notes some exceptions taken with the PBA and proposes that additional modifications are needed including fire-protective coatings on portions of primary extraction column supports and changes (e.g., new catch basin) to divert primary and secondary extraction combustible liquids to the first floor. YSO also notes that continued adherence to the combustible control program for B-1 Wing will be necessary. (I)

B. Building 9212 Oxide Conversion Facility (OCF). The site rep. observed an Emergency Management exercise, supporting OCF startup preparations, that simulated a forklift drop of a hydrogen fluoride (HF) storage cylinder during cylinder loading operations. The dropped cylinder resulted in release of HF and a compound fracture injury to an operator's leg. For this exercise, issues regarding command/control, communications, and management of injured personnel were noted by Y-12 evaluation personnel; in particular, not administering first-aid to the operator with the injured leg until about 50 minutes after initial event notification (most delay apparently due to hazardous material response preparations). Assessments of the exercise are being completed along with development of lessons-learned and corrective actions.

As reported on March 5th, YSO and BWXT personnel were evaluating the use of surrogate feed material during upcoming OCF "cold" operations. This week, it was decided that surrogate feed material will not be used for OCF cold operations (due to concerns with equipment damage and product contamination); however, a series of evaluations and additional mockup testing of certain valves with surrogate material is to be performed to address YSO concerns with equipment operability. (II)

C. ORNL Building 3019. As reported on October 17th, DOE awarded a contract to address the long-term disposition of the stored uranium-233 and shutdown of Building 3019. The overall program includes extraction of thorium-229 for medical purposes and down-blending of the uranium-233. The site rep. met with personnel from DOE Headquarters, DOE-ORO and the lead contractor, Isotek Systems, to discuss design of equipment and facility modifications for these operations. Thorium-229 extraction will be accomplished by an ion-exchange process with dissolved uranium-233 and down-blending will be accomplished by mixing of uranyl nitrate solutions (uranium-233 with depleted uranium). These steps will be followed by denitration to produce oxide for disposition.

Major modifications to Building 3019 are planned including new hot cells for the dissolution and ion exchange steps and new equipment for denitration. A 30% design review was conducted in February by DOE-ORO and identified issues are being addressed. A primary issue is the structural challenge presented by the new dissolution hot cell to be installed in the penthouse area of Building 3019. Preliminary nuclear safety analyses are in development. A 60% design review is planned in June. (III)

cc

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