

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 16, 2004

TO: J. Kent Fortenberry, Technical Director
FROM: Donald Owen, Oak Ridge Site Representative
SUBJ: Activity Report for Week Ending April 16, 2004

Staff members Contardi, Davis, Tontodonato and Winters visited Y-12, ORNL and Melton Valley facilities this week to review various activities including planned neptunium, plutonium-238 and uranium-233 storage and processing. Staff members Linzau and Quirk visited Y-12 to conduct a review of the Highly Enriched Uranium Materials Facility.

A. Highly Enriched Uranium Materials Facility (HEUMF). The staff and site rep. reviewed instrumentation and control (I&C) systems and software quality assurance for HEUMF. Observations were noted by the staff during the review including: lack of safety-significant designation of components between designated safety-significant dampers and associated safety-significant control valves in the secondary confinement ventilation system; a potential safety issue with a motor-driven damper; and, omission of some electrical and I&C design standards noted in DOE G 420.1-1, *Nonreactor Nuclear Safety Design Criteria and Explosive Safety Criteria Guide for use with DOE O 420.1 Facility Safety*. YSO and BWXT personnel indicated to the site rep. and staff that these observations will be addressed in the near future.

The classified HEUMF Preliminary Documented Safety Analysis (PDSA) was formally submitted to YSO this week. A focused YSO review of the PDSA is planned for the next two weeks with any comments to be formally transmitted at the end of this period by YSO. The YSO review team is being augmented by staff from the Albuquerque Service Center and LLNL.

B. Recommendation 2000-1 at ORNL. As reported on February 6th, DOE-ORO had re-designated approximately 700 grams of plutonium-238 for use in the planned ORNL plutonium-238 production program noted below in lieu of near-term shipment to LANL. The plutonium-238 is stored in nine packages of various designs in Building 3027 at ORNL. The site rep. and staff observed the current storage conditions of the packages in the Building 3027 storage vault. No issues were identified.

To support planned interim storage (seven or more years) of this material at ORNL, ORNL intends to repackage these items into robust special form capsules. Repackaging of three of the nine items is to be performed in a glovebox in Building 3525. Although ORNL does not plan to open the innermost container during repackaging, there is potential for contamination external to the innermost container because of the age (30-plus years) and design of the inner seal on these three packages. Work planning for this initial repackaging effort is in progress and is expected to be completed during the week of April 19th.

C. Neptunium Storage at Y-12. As previously reported (see April 2nd and July 17th site rep. reports), Y-12 is to provide long-term storage for neptunium oxide as part of the planned plutonium-238 production program at ORNL. The oxide is to be stored in the "9975" shipping container, as received from the Savannah River Site, in Building 9204-2E. Safety basis documents to support the neptunium storage activity are being developed and are projected to be submitted in May. BWXT plans to be ready to receive material as early as Fall 2004. Opening of the shipping containers is not planned to be authorized at Y-12. It is not clear what capability Y-12 will have to handle suspect or damaged containers. The staff and site rep. consider that it would be prudent to develop plans and procedures to handle such problem containers. The staff and site rep. discussed this observation with YSO and BWXT personnel.