

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 20, 2009

TO: Timothy Dwyer, Technical Director
FROM: Donald Owen and David Kupferer, Oak Ridge Site Representatives
SUBJECT: Activity Report for Week Ending March 20, 2009

Documented Safety Analyses (DSAs). In 2007, a DOE workgroup recommended that NNSA adopt the Dose Conversion Factors (DCFs) in the International Commission on Radiation Protection (ICRP) Publications 68 and 72 (some NNSA sites, including Y-12, are still using DCFs from the ICRP Publication 30). In August 2008, per NNSA Headquarters direction, YSO asked B&W to implement the workgroup's recommendation as part of the next annual updates of the site's DSAs. The accident analyses in Y-12 DSAs currently assume, conservatively, that inhaled uranium is slowly removed from the body. The DCF associated with this type of slow removal is significantly reduced in Publication 72 compared to Publication 30. Therefore, B&W could reduce the public dose consequences it has analyzed for accidents involving the off-site release of uranium by using the DCFs from Publication 72. However, B&W has proposed that the cost associated with updating approved DSAs is not worth the benefit associated with being able to downgrade some controls. B&W has committed to use the new DCFs when developing DSAs to support new facilities and major modifications.

Furnace Reduction Operations. B&W has completed the Unreviewed Safety Question Determination (USQD) regarding the damage to two safety-significant reactor vessels identified in September (see the 2/27/09 site rep. report). The USQD states that no unreviewed safety question exists as the credited safety function of the vessel was not lost. As previously reported, B&W's evaluation concluded that calcium, migrating from the crucible to the vessel wall and lid during the reduction reaction, is attacking the alloy material of the vessel and lid. The USQD stated the damage is occurring after pressure has peaked and dropped and would not be sufficient to compromise vessel integrity during the operation. Previously proposed corrective actions to preclude calcium migration are being implemented.

Criticality Safety. Last week, a B&W criticality safety engineer on a walk-down identified a criticality safety violation in a Large Geometry Exclusion Area (LGEA) in the Enriched Uranium Operations Building. The violation involved use of a new Non-Destructive Assay (NDA) detector for measuring certain material cans with enriched uranium for accountability purposes. The new (larger) NDA detector, with an internal volume greater than the 4-liter LGEA limit, had not been reviewed and approved by criticality safety personnel for use in the LGEA. The new NDA detector was not specifically identified to the shift manager by NDA personnel in obtaining authorization to perform the operation. The fissile material handler and supervisor supporting the operation did not recognize the LGEA violation. B&W plans to provide reinforcement training on LGEA requirements to both Operations and NDA personnel. B&W is also considering a broader lessons-learned on the need to evaluate the potential safety impact of seemingly minor changes to routine activities.

Excess Facility Cleanup and Disposition. Funding from the American Recovery and Reinvestment Act (ARRA) is expected to assist in accelerated facility cleanup at Y-12 that, among several efforts, includes removal of nuclear materials from Buildings 9201-5, 9204-4 and 9206. B&W intends to remove materials from Buildings 9201-5 and 9204-4 to levels below the thresholds for a Hazard Category-3 nuclear facility during the next several months. The YSO Manager has issued correspondence to B&W emphasizing the need to conduct all ARRA work consistent with the Y-12 Integrated Safety Management System. YSO requested that B&W provide B&W's safety strategy for ARRA work.