

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

TO: Steven Stokes, Acting Technical Director
FROM: William Linzau and Rory Rauch, Site Representatives
SUBJECT: Oak Ridge Activity Report for Week Ending June 21, 2013

Staff member David Grover was on site conducting a review of ventilation systems in Buildings 9204-2E and 9215.

Technical Procedures: Last week, the site reps found that some shift managers had been using an effective technical procedure that had not been updated in nearly 15 years. The procedure, which governed public address system (PAS) voice tests and was occasionally used for the purposes of establishing Criticality Accident Alarm System audibility, was not in a format consistent with the Technical Procedure Authoring Tool (as required by B&W's technical procedure process), and contained several outdated terms, including an obsolete use category. The technical procedure process requires responsible managers to review technical procedures on an established periodicity (this varies depending on the activity governed by the procedure, but the minimum frequency is five years) in order to ensure that the procedure format and terms are current. The site reps raised a concern with NPO and B&W management that the antiquated nature of the PAS voice test procedure may be an indication of weaknesses in the periodic procedure review process. B&W performed an extent-of-condition review and found that 155 of the 1201 effective technical procedures owned by the production organization had not received a periodic review within the required time frame. NPO performed a separate extent-of-condition review and found similar issues with procedures owned by the quality and emergency services organizations. B&W is developing a plan for addressing the procedure review backlog.

Solid Waste Storage Area (SWSA)-5: The SWSA-5 project involves processing, repackaging, and certifying 26 containers of plutonium-bearing materials for disposal at the Waste Isolation Pilot Plant (WIPP). The SWSA-5 material was declared waste in the mid-1980s and is currently stored at Oak Ridge National Laboratory. This week, the Oak Ridge Office of Environmental Management (OREM) approved the most recent Startup Notification Report (SNR) submitted by Wastren Advantage, Inc. The SNR indicates this activity is a major modification to a hazard category-2 facility and will require an Operational Readiness Review with OREM as the approval authority. SWSA-5 activities are expected to start early in 2014.

Microwave Casting: Carbon is the one of the primary impurities of concern in cast uranium parts because it contributes to the formation of uranium carbide agglomerates that prevent the part from being machined to required specifications. The vacuum induction melting casters currently used in Building 9212 typically increase the carbon content of the item being cast. This is primarily due to the graphite crucible and mold, which provide a source of carbon that can diffuse into the molten charge. To counteract this phenomenon, personnel add highly purified uranium metal during batch makeup to ensure that parts will remain within specification once the run has been completed. One of the anticipated benefits of microwave casting technology is its ability to reduce the carbon content in the item being cast. The reasons for this phenomenon are not fully understood, though experts believe that the materials used for the crucible and mold, the environment in the furnace, and the nature of the mixing induced by microwave frequencies are all contributors. The chemical analyses of the first consolidation logs cast in the production microwave caster were recently completed. The results showed a reduction in carbon content of approximately 15 percent. The microwave casters used by the technology development organization and the prototype unit in Building 9212 had also produced these results on more than 100 runs. Microwave casting technology would reduce the future demand for highly purified uranium metal if it can produce these results consistently.