

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 7, 2008

TO: J. Kent Fortenberry, Technical Director
FROM: R. Todd Davis/David Kupferer/Donald Owen, Oak Ridge Site Representatives
SUBJECT: Activity Report for Week Ending March 7, 2008

A. Wet Chemistry - Intermediate Evaporator. Last Friday, during operation of the intermediate evaporator, operators noticed significant fluctuations in density measurements. A sample was taken from the evaporator and a vigorous, rolling boil in the sample beaker was noted. Shortly thereafter, a gamma monitor alarm was received indicating carryover of uranium solution to the process condensate tanks. Operators completed actions required by the alarm response procedure to ensure the automatic diversion valve had actuated to divert the process condensate. In addition, operators shutdown the evaporator (steam was secured). Analysis of samples from the process condensate confirmed carryover of uranium solution. Facility management suspended intermediate and high-capacity evaporator operations pending investigation of this issue.

On Monday, after guidance was received from nuclear criticality safety personnel, samples were taken from the evaporator, evaporator feed tanks, process condensate system and primary extraction system. Operators again noted a reaction associated with the sample taken from the evaporator and also noted the presence of a white sediment. Samples taken from the bottom of the evaporator feed tanks indicated the potential presence of organic materials (multiple liquid phases were observed). All of the samples were sent to the laboratory for analysis. The evaporator feed tanks were subsequently drained to safe bottles and processed through the filter and separate station. Multiple phases were not identified. B&W management has assigned an investigator for this issue. Some initial areas under investigation include the potential for introduction of solvents (or other materials) during a pour-up evolution and carryover of organics from either primary or secondary extraction.

During a walk-down of the intermediate evaporator, the site reps. observed valve locks (including locks on a vent valve and a gamma monitor isolation valve) that were not tagged. The site reps. have inquired with YSO regarding the requirements for these types of locks.

B. Microwave Casting. B&W has been planning a project to install a microwave casting unit for production use in the Enriched Uranium Operations Building following the previous successful demonstration with a prototype. This week, YSO concurred with a B&W evaluation concluding that replacing an existing conventional casting furnace with a new microwave casting unit for production use does not constitute a major modification. DOE defines "major modification" in 10CFR830, *Nuclear Safety Management*, as a modification that substantially changes the existing safety basis for a facility. B&W noted that the approved facility safety basis already contains an accident analysis and Technical Safety Requirements for the prototype microwave unit. B&W contends that this existing analysis will not require substantial changes to implement the production microwave casting unit. As YSO has determined that this project is not a major modification, a Preliminary Documented Safety Analysis will not be required. A Project Execution Plan is being developed with startup planned for 2010.