

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 17, 2012

TO: T. J. Dwyer, Technical Director
FROM: W. Linzau and R. Quirk, Hanford Site Representatives
SUBJECT: Hanford Activity Report for the Week Ending February 17, 2012

Plutonium Finishing Plant: Three significant events occurred in rapid succession on Wednesday and facility personnel responded to the upset situations appropriately. The first event occurred in a high contamination area (HCA) when a worker who was wearing two sets of personal protective equipment (PPE) clothing and a powered air purifying respirator (PAPR) with a hood experienced breathing problems. The worker was evacuated from the room on the first floor of the facility and was attended to by fellow workers and site emergency personnel. It is believed that the PAPR became inoperable from inadvertent contact caused by excessive maneuvering around obstructions. The excessive maneuvering could have been avoided if there was more consideration for the placement of the HCA barrier.

As the recovery for that event was finishing, a significant contamination event occurred. Workers were preparing for the removal of contaminated piping and they were wearing two sets of PPE, but respirators were not required. A Radiological Controls Technician (RCT) found contamination levels on steel decking that voided the Radiological Work Permit and directed the work team to evacuate. During the evacuation process, the RCT found significant contamination on the PPE of one of the workers. More than a dozen workers received precautionary nasal smears, and the smear was positive for one of the workers. The workers who were in the immediate work area will complete a bioassay. The contractor stopped all work in the affected areas and a recovery plan is being generated. The contamination spread appears to be related to disturbing fixed contamination in the work area, and this hazard may not have been adequately evaluated during the work planning process.

At or about the same time as the contamination discovery, another RCT struck a cross-member of a scaffold with his hardhat. He was transported to a medical facility and advised to stay home one day to recover from a minor neck injury.

Waste Treatment Plant (WTP): The site rep observed a meeting conducted to identify the hazards associated with transportation of materials on the WTP site. The focus of this meeting was addressing hazards posed by vehicle interaction with other vehicles; facility structures, systems, and components; and stand-alone events. The transport of bulk chemicals is also being considered, but the scope of the review excluded the movement of radioactive wastes, such as loaded HEPA filters and spent resins, until later. The contractor's tendency to delay analyzing certain hazardous conditions was recently noted during a separate review (see Activity Report 2/3/12). This was the first meeting of this team and the facilitator spent a considerable amount of time discussing nuclear safety concepts from DOE-STD-3009 to ensure uniform understanding.

The site rep met with contractor and ORP engineers to discuss the design of the controls for the pulse jet mixers (PJMs). The existing control system design appears to meet single-failure criteria. However, the contractor is evaluating the use of a small hole near the bottom of the PJM as a means to identify the completion of the drive cycle or an imminent overblow. If this feature is incorporated in the final design and is credited as a safety-class control, the contractor will need to address the potential for plugging of the hole as part of the single-failure analysis.