DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 29, 2008

TO: T. J. Dwyer, Technical Director
FROM: W. Linzau and R. Quirk, Hanford Site Representatives
SUBJECT: Hanford Activity Report for the Week Ending August 29, 2008

Staff members P. Foster, C. Martin, and R. Verhaagen were on-site to review digital instrumentation and controls and software quality assurance at the Waste Treatment Plant and the Tank Farms.

Spent Nuclear Fuel: Spent Nuclear Fuel: The project completed the processing of spent nuclear fuel in the first of two multi-canister overpacks (MCOs) and transferred it to the Canister Storage Building. During the drying of the MCO in the Cold Vacuum Drying Facility, the Safety Class Instrumentation and Control System (SCIC), a safety-significant system, initiated two isolation and purge trips (Iso/Purges). The first Iso/Purge was caused by an abnormal logic state in the non-safety Monitoring and Control System (MCS), and is similar to SCIC trips during the processing of prior MCOs. This abnormal MCS logic state resulted from running only part of the normal process during the recent Operational Readiness Review. The second Iso/Purge was related to poor planning during the recovery from the first Iso/Purge. Required operational flexibility provided to the operators during normal MCO processing was not included in the recovery plan. Both trips resulted from inadequate work planning for abnormal conditions.

A number of conduct of operations (ConOps) issues were noted by a facility representative (FR) and senior supervisory watch (SSW) during the helium purge of the MCO in K West. The issues were similar to ConOps problems noted during the ORR. The FR considered a stop work, but determined that no imminent danger existed, most of the errors were noted and corrected by the SSW, and all the individual problems were corrected before moving forward.

Waste Treatment Plant (WTP): The contractor is preparing an Authorization Basis Amendment Request (ABAR) to incorporate WTP Site-Specific Ground Motion (WSGM) into the Safety Requirements Document (see Hanford Activity Report 5/3/08). They submitted an evaluation process to the Office of River Protection (ORP) that guides selection of equipment that will be considered for re-analysis using the WSGM. The process uses three basic criteria to determine if a re-analysis is warranted versus making modifications to the existing component that was analyzed for seismic loads using the Revised Ground Motion. If a component requires a modification, then the process would evaluate if the modification: (1) increased complexity of design, which can result in decreased constructability, operability, maintainability, and reliability; (2) required hazardous work to modify existing vessel internals; and (3) caused increased cost and schedule. The ABAR will include a restriction that requires ORP approval prior to using WSGM on specific equipment and the ABAR is expected to be submitted to ORP next week.

Tank Farms: The contractor concluded that the potential inadequacy in the safety analysis (PISA) identified in February 2005 involving the use of variable frequency drives (VFDs) in the tank farms was not a PISA, but a related PISA initiated in June of this year is an unreviewed safety question (USQ). The issues are related to exceeding the design pressure of components, such as isolation valves, if the waste transfer pump VFD speed is too high. The contractor also noted that the maximum speeds during some past operations could not be determined.