

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 13, 2024

TO: Timothy J. Dwyer, Technical Director
FROM: Frank Harshman and Clinton Jones, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending September 13, 2024

Staff Activity: A. Boussouf, J. Heath, D. Shrestha, and M. Wright traveled to Y-12 as part of a review to evaluate the adequacy of selected portions of the fire protection program against DOE and industry standards.

Building 9212: CNS declared technical safety requirement (TSR) violation due to failure to meet a specific administrative control (SAC) for required sampling prior to transfer of certain solutions out of Building 9212. The SAC requires two independent samples below criticality safety evaluation (CSE) limits. These limits ensure liquids containing residual fissile material remain subcritical after transfer to large geometry tanks with unfavorable nuclear criticality geometry. Two samples per tank were obtained for two different tanks involved, as required by the SAC, however one of the sample results exceeded the limit specified by the CSE. The supervisor and shift manager authorizing the transfer did not recognize the sample results were above the allowable transfer limits because the sample results were documented in the incorrect units. Malfunctioning equipment interrupted the transfer of one of the tanks before its conclusion. CNS identified that one of the tank sample results exceeded the specified CSE limit when investigating the malfunctioning equipment. The chemical recovery supervisor erroneously reported that the out of specification tank had been partially transferred at the time of the discovery. CNS entered their abnormal operating procedure for abnormal conditions involving fissile material, established an administrative boundary around the tanks, and declared a TSR violation. CNS drew additional samples from both tanks. CNS later determined that the other tank with acceptable sample results was partially transferred, not the tank with results above the allowable transfer limits, and that the initial report of the noncompliant tank transfer was an error. Resample results from the tank originally deemed non-compliant returned within limits, however one sample from the partially transferred tank exceeded the transfer limit despite having two satisfactory samples prior to the start of the transfer. CNS placed the process on hold while it awaits additional sampling results from the plant lab. The resident inspector (RI) discussed the event with Building 9212 facility operations management and nuclear criticality safety (NCS) personnel. CNS plans to hold a formal event investigation on the issues identified and request expedited processing of the additional samples. CNS is evaluating rescinding the TSR violation since transfer of the tank with the sample that exceeded the CSE limits prior to transfer did not occur. The RI plans to attend the event investigation and evaluate the corrective actions.

Nuclear Criticality Safety: Y-12 engineering filed an occurrence report for inadequate CSE analysis of low point drains in the Building 9215 ventilation system. An inadvertent accumulation prevention program walkdown team identified multiple undrained low points which were not addressed in the CSE. The CSE requires that all ductwork is maintained such that there are no undrained low points. Therefore, the CSE does not properly capture and analyze existing low points. CNS entered its potential NCS issue process to evaluate the CSE and will hold a formal event investigation in the coming week.