

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 16, 2016

TO: S. A. Stokes, Technical Director
FROM: M. T. Sautman and Z. C. McCabe, Site Representatives
SUBJECT: Savannah River Site Weekly Report for Week Ending December 16, 2016

Defense Waste Processing Facility (DWPF): A recent event involved numerous breakdowns in the execution of a maintenance task and subsequent alarm response. Schedulers had originally assigned a maintenance crew qualified to work on a refrigerant system to replace a pressure safety valve (PSV) on a process chiller oil pump reservoir. When plans changed and there was some free time to perform additional work, a maintenance first line manager (FLM) provided the work package and lockout order to a different crew and asked them to establish the electrical lockout. Neither the FLM nor this crew reviewed the work package and realized the scope involved a refrigerant system. This crew was not qualified to work on refrigerant systems.

The workers mistakenly believed that the FLM's verbal request to establish the lockout satisfied the requirement to perform a pre-job briefing and signed this prerequisite step as complete. Due to the high noise environment, the workers did not perform the work in accordance with reader/worker protocol nor did they use three-way communications. The "reader" stated he was reading the first step that references refrigerant when the "worker" performed the line break, which was four steps ahead. As a result, the "worker" skipped the steps to remove the refrigerant from the system and to have a FLM or designee present during the initial line break. Although the system does not have any gauges to indicate the refrigerant pressure in the system, the workers assumed a nearby fixture had allowed the system to be depressurized earlier. When the "worker" unscrewed the PSV, escaping refrigerant hissed loudly and the refrigerant detection system alarmed locally and on the distributed control system (DCS) in the control room. To stop the leak, the "worker" replaced the PSV. The two workers and a radiological controls technician left the work area and contacted the shift operations manager (SOM). During the phone call the alarm cleared.

Subsequent investigation revealed that the refrigerant alarm sounded for 18 minutes. The workers present at the time of the refrigerant release estimated that they were in the affected area for less than one minute. They exhibited no health problems and an industrial hygiene review of the concentration data indicated their exposures were within allowable limits. Additionally, control room operators silenced and never announced or acknowledged the DCS alarm in the control room. Other DWPF personnel near the room where the refrigerant release occurred mistakenly reported the refrigerant alarm as a fire alarm to the control room operator. The operator responded accordingly. The DWPF personnel did not enter the appropriate alarm response procedure for the refrigerant alarm. The immediate corrective actions include requiring a FLM to be present during an initial line break (i.e., not a designee) and only allowing FLMs to sign off steps that ensure a pre-job brief was performed. DWPF personnel are scheduled to hold a meeting to perform a causal analysis and determine additional corrective actions next week.

3H-Evaporator: Tank Farms personnel began using a robot to cut and remove sections of insulation from the 3H-Evaporator pot. Thus far three sections of the insulation have been removed. The location of the leak is still uncertain. However, Tank Farms personnel assume the leak is in the cone section of the evaporator pot.