Department of Energy
Savannah River Operations Office
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OFFICE OF THE CHAIRMAN

The Honorable A. J. Eggenberger
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, N. W., Suite 700
Washington, DC 20004-2901

Dear Mr. Chairman:

The purpose of this letter is to report the Department of Energy's (DOE) status of the corrective actions taken in response to the electrical distribution system design issues at our H-Area Facilities identified in your February 6, 2009, letter to the Assistant Secretary for Environmental Management.

On April 23, 2009, representatives of Savannah River Operations Office (SR) and the Managing and Operating Contractor, Savannah River Nuclear Solutions (SRNS), briefed the Defense Nuclear Facilities Safety Board on the actions taken to address the H-Area electrical distribution system design issues. Enclosure 1 briefly describes the basis for, and status of, the final corrective actions for each of the electrical issues. Based on the presentation, follow up discussions with the board staff, and subsequent follow up actions identified during these discussions, SR considers sufficient corrective actions have been developed and are being implemented to address each of the H-Area electrical issues.

If you have any questions, please contact me or have your staff contact Mr. Pat McGuire at 803-208-3927.

Sincerely,

Jeffrey M. Allison
Manager

NMED:JK:sjm

NMED-09-0063

Enclosure:
Issue Status Enclosure

cc w/encl:
J. Owendoff (EM-3), HQ
S. Krahn (EM-60), HQ
M. Whitaker, HS-1.1

ENCLOSURE: Letter Allison to Eggenberger
SUBJECT: H-Area Electrical Safety Issues
Date: JUL 27 2009

On April 23, 2009, representatives of Savannah River Operations Office (SR) and the Managing and Operating Contractor, Savannah River Nuclear Solutions (SRNS), briefed the Defense Nuclear Facilities Safety Board on the actions taken to address the H-Area electrical distribution system design issues.

Each of the five issues identified is discussed below to describe the basis for, and status of, the final corrective actions for each of the electrical issues:

1. Operation of 254-19H Power Distribution Systems, concern regarding excessive number of breakers and the absence of an automatic transfer switch.

   - In response to this concern, the contractor prepared an evaluation of the reliability of the current configuration. SRNS used IEEE 493-2007 and NFPA 70B to determine reliability for existing and proposed configurations. The analysis, which was presented as part of the brief, concluded that while there could be a small increase in overall reliability, the increase was insufficient to warrant any modifications to the system. While a Fault tree evaluation has indicated that there may be a vulnerability with the existing electrical configuration, SRNS has demonstrated that the appropriate load bank switch alignment procedures are in place to adequately address this concern. The potential vulnerability centered on ensuring that the load bank was isolated from the diesel generator circuit to minimize the possibility of introducing a "human error" that could impact availability of the diesel generator supplied power. These procedures have been previously provided to DNFSB staff.

2. Lightning Protection for 292-H Fan House, concern of Fan House lightning protection adequacy.

   - The fan house lightning protection design was designed to National Fire Protection Association (NFPA) 78, *1978.* DOE recognizes that upgrades should be considered to ensure the entire facility can meet the updated code requirements (NFPA 780, *1992),* which could improve the safety posture of the facility. The necessary upgrades have been added to the site Integrated Priority List. Some factors which were considered in determining the ranking of these upgrades on the list include: 1) a lightning strike would need to disable all three Canyon Exhaust Fans to cause a potential spread of contamination within the facility and potential unfiltered release from the facility, and 2) a loss of all Canyon Exhaust Fans would result in entry into a Limited Condition for Operation which would ensure that the exhaust system was returned to service as soon as possible and that the facility be placed in an optimally safe configuration in the meantime. A copy of the integrated priority list has been previously provided.

3. Ampacity of HB-Line Cables in Penetration Seals, concern that power cables installed in fire stop penetration seals may require Ampacity derating.

   - SRNS completed an evaluation of all cables and determined that there were two cables associated with the motor control centers that had loads greater than 50% (a furnace and a heater). Technical information on the current values of these cables was previously provided to DNFSB staff. There were eleven lighting panel cables (120 volt) that are loaded above 50%. All of the cables evaluated are loaded below 65%. A work request has been issued to trace and perform thermography on the identified cables. Pending these results appropriate follow-up actions will be taken.

4. Switchgear Vents Near Fire suppression System, concern that water form the 254-19H fire suppression system could inadvertently enter the switchgear through heat vents.

   - DOE agrees that providing a hood to minimize water intrusion from inadvertent sprinkler activation is a warranted improvement. SRNS is currently working with the switchgear vendor to determine availability and installation procedures. A modification traveler will be processed to perform the design change for the switchgear.

5. Transfer Torque for Canyon Exhaust fans, concern that during fast reclosing (after power loss). Large motors can develop transient currents and torques which can damage equipment.

   - SRNS prepared a transient torque evaluation which demonstrated that the procedural requirement of a minimum 2 second delay would provide the required minimum of at least one and one half AC open circuit time constants. A copy of the evaluation has been previously provided to DNFSB staff.